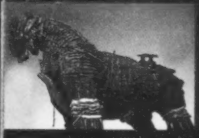

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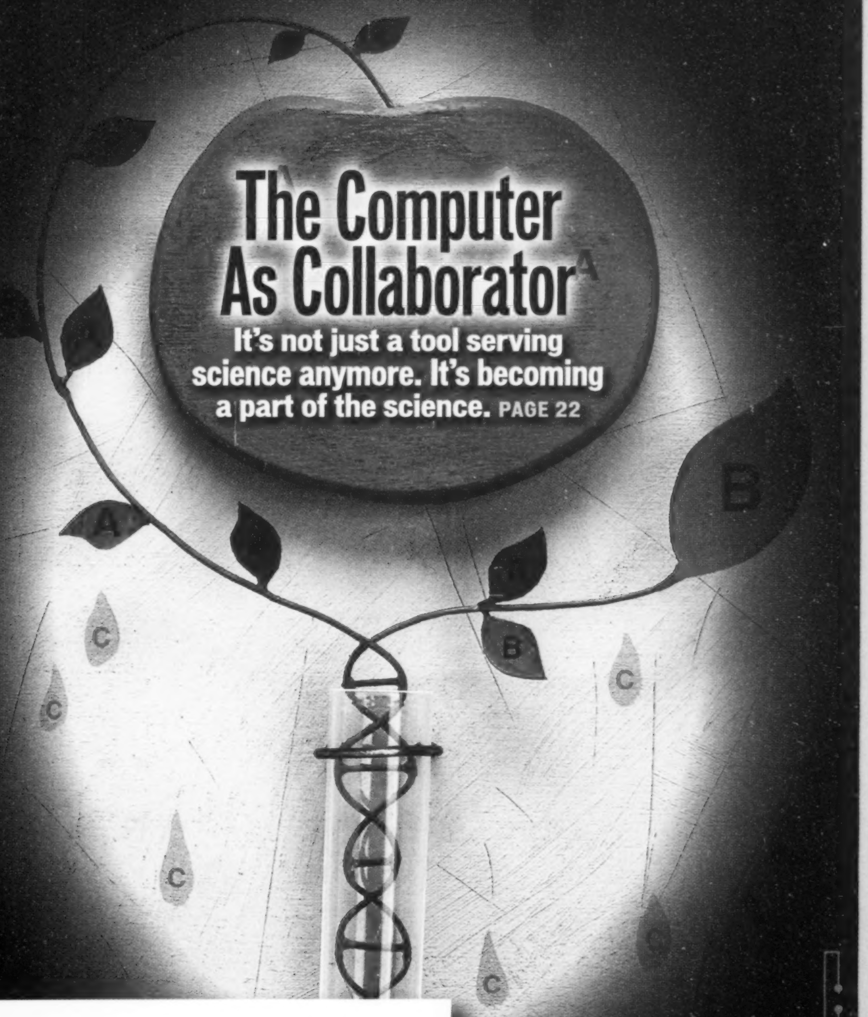

The Computer As Collaborator

It's not just a tool serving science anymore. It's becoming a part of the science. PAGE 22

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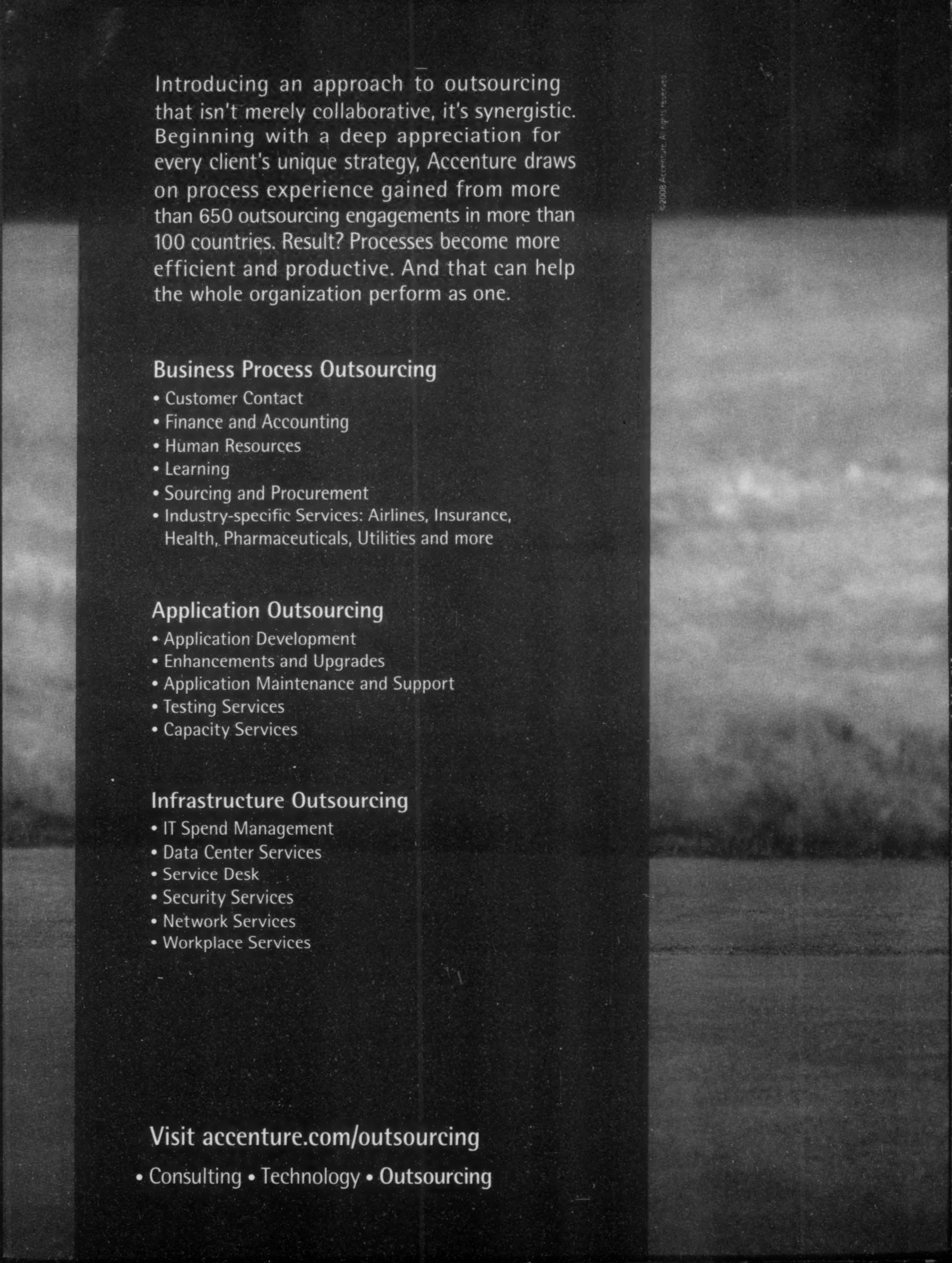

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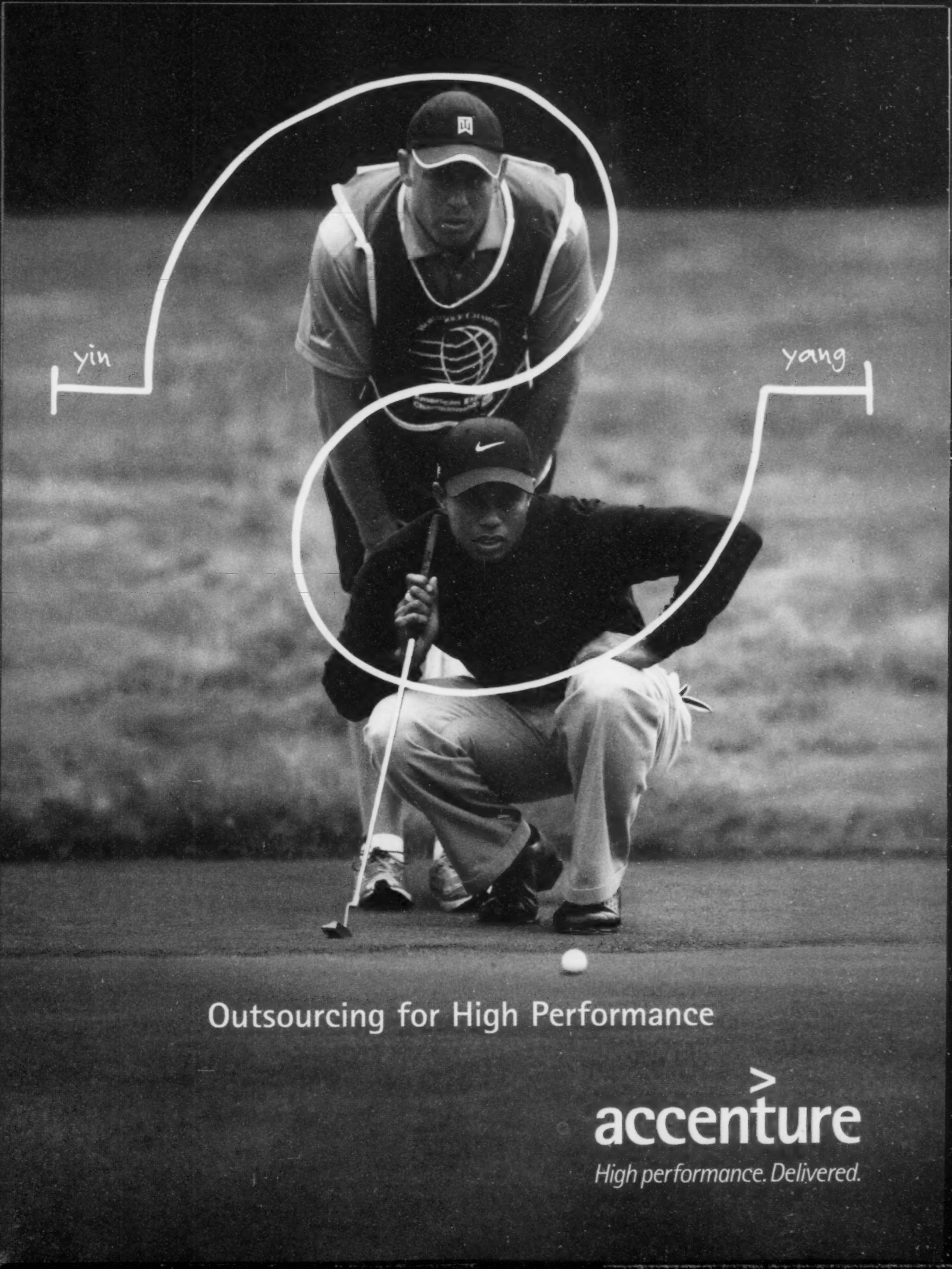
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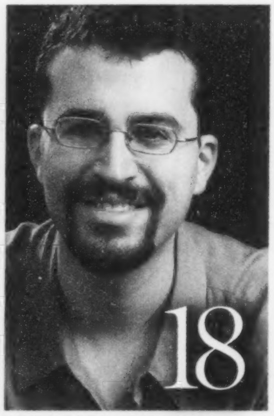

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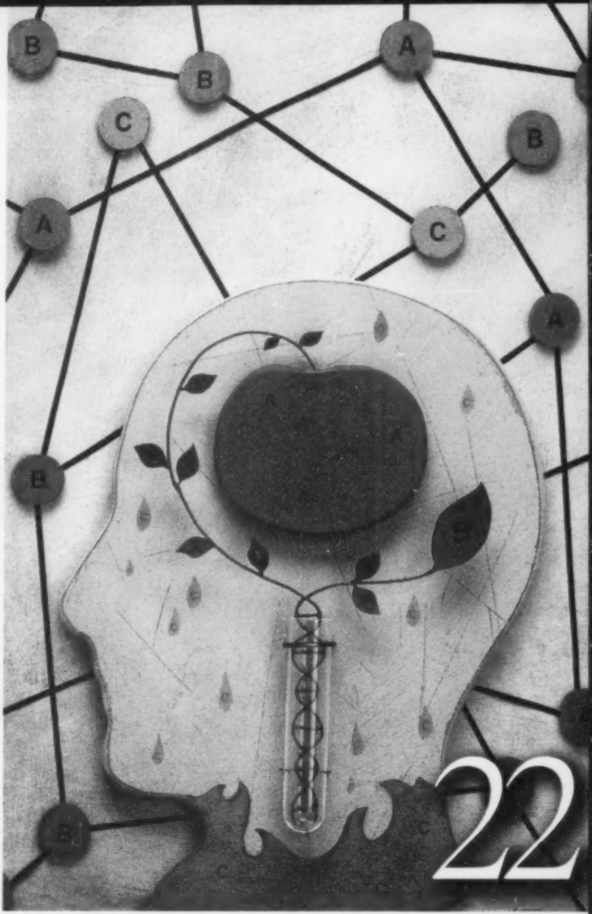

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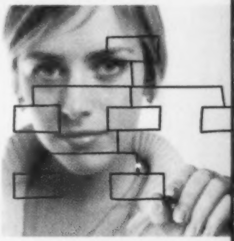

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Ever wonder why some tech terms make it into the dictionary while others don't? We ask the experts.

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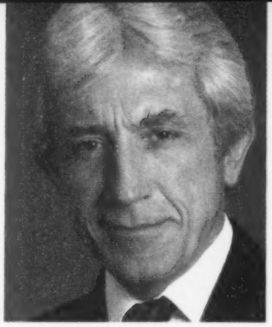
Don Tennant



Of Varying Degrees

IF YOU see devils wearing parkas this Halloween, don't be surprised. Hell just froze over. I know, because a marketing executive from an IT vendor recently said something that was insightful and worthwhile.

Those of us who have been numbed by the mindless blather of marketing types have come to expect to hear all about how "at the end of the day, it's all about the right solution to stay ahead of the curve in the paradigm shift." But shockingly enough, I've found that there's at least one marketing exec who doesn't fit the mold.

Her name is Sandy Carter, and she is vice president of SOA and WebSphere strategy, channels and marketing at IBM. Don't roll your eyes and stop reading. Hear me out.

At an IBM-sponsored SOA summit in San Francisco a couple of weeks ago, Carter's responses as she took questions from the audience were far from the marketingspeak one might expect, given her job title. For example, she told one attendee that SOA isn't for everybody and that if his company can accomplish its objectives without it, there's no reason to go there. That alone was sufficient to persuade me to listen to what she had to say.

And what she said that I found especially important was this: People who are interested in a career in information technology should not pursue a computer science degree. Instead, Carter said, they should get a degree in service management.

She said it almost in passing as part of a response to an SOA skills-related question, and no one in the crowd followed up on it. But when you think about it, that's a game-changing assertion. Service management — a process-focused discipline centered on IT's provision of services that advance the business — is to the future of IT what computer science was to its past.

It doesn't take much more than a peek inside the discipline and how it's being practiced to appreciate the veracity of that statement. I got that peek last month, when I attended the annual conference of the IT Service Management Forum, or *it*SMF USA. Just for the fun of it, I produced a tongue-in-cheek video, in which I confronted random conference attendees to address with mock indignation the question of why the "IT" in *it*SMF is rendered in lowercase italic. It was an affront to the field of IT, I teasingly argued. (The video is posted on my blog.)

Service management is to the future of information technology what computer science was to its past.

What struck me was the earnest conviction of those attendees, who good-naturedly but adamantly insisted that it's appropriate for SM to have the visual upper hand over IT, because it's service management that warrants the emphasis. And the more I think about it, the more I'm convinced they're right. As technology becomes increasingly commoditized, it's the structures and processes created to ensure that technology delivers true business value that really count.

That brings us back to Carter's reference to degree programs. Just how realistic is it for students to pursue a degree in service management rather than computer science? How widely available is that option?

To be sure, university programs in service management are rare. But you can expect that to change.

Carter didn't mention it, but I subsequently learned that IBM helped create a service management degree program at Missouri State University last year. IBM claims that it's the first BS degree in IT service management in the U.S., and so far, I've seen nothing to refute that.

Just this fall, moreover, Carnegie Mellon University's School of Computer Science began offering a graduate-level degree called a Master of Science in Information Technology in IT Service Management (MSIT-ITSM). Other schools, like the University of Dallas, are beginning to offer MBAs and other master's degree programs with an emphasis on ITSM.

There undoubtedly will be more of these programs in the near future, and students would be well advised to keep an eye out for them. Hell might freeze over again before a degree in computer science is a ticket to a successful career in IT. ■

Don Tennant *is editorial director of* Computerworld *and* InfoWorld. *Contact him at don_tennant@computerworld.com, and visit his blog at* http://blogs.computerworld.com/tennant.

ONLINE CHATTER

RESPONSE TO:

When the Watchdog Is the Underdog

Oct. 13, 2008

In the realm of risk, unmanaged possibilities become probabilities. As CIO, I'm always looking for ways to help my team and the business teams, as well as the ad hoc measures of various vendors, contractors and internal team members. A book that is required reading (or at least specific chapters, depending on the nature of your projects and teams) is *I.T. Wars: Managing the Business-Technology Weave in the New Millennium*, by David Scott.

We keep a few copies kicking around — it would be a bit much to expect outside agencies to purchase it on our say-so. But, particularly when entertaining bids for projects and in the face of challenging change, we ask potential partners to review relevant parts of the book, ensuring that these agencies understand our values and practices.

The book came to us as a tip from one of our interns who attended a course at the University of Wisconsin, where the book is in use; I like to pass along things that work, in the hope that good ideas continue to make their way to me.

Submitted by: *John Franks*

RESPONSES TO:

The Trouble With Telecommuting

Oct. 13, 2008

Here are the facts. Folks who do not perform in the workplace will not perform at home. In a global environment where companies have to work at off-hours, one can get more done in a home office.

Submitted by: *Phil D., Phoenix*

"The trouble with telecommuting" makes for a catchy title but misses the point. The question is, When does telecommuting work and when does it not?

Exit strategy? Just tell telecommuters to come to work or be fired.

Submitted by: *Steve Kirby*

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Cheap Business Laptops: Three for Under $850

If you're trying to save some cash on your next notebook, you might want to try one of these low-cost, but well-built machines.

Apple's New 'Unibody' MacBook Pro Has Both Beauty and Brains

Review: Apple's new MacBook Pro represents a definitive leap in design and a modest advance in technology, with a bit of innovation thrown in for good measure. That combination should offer good value for years to come.

10 Essential Tasks to Keep Leopard Purring

Mac OS X Leopard isn't prone to crashes, freezes, drive corruption or inexplicable performance losses, but you should still do some maintenance to prevent problems and keep it running at its best.

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The Top 10 Best-Written Blogs

Blog: John Brandon sifts through the blogosphere and finds a few hidden gems that are exceptionally literate.

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News Digest

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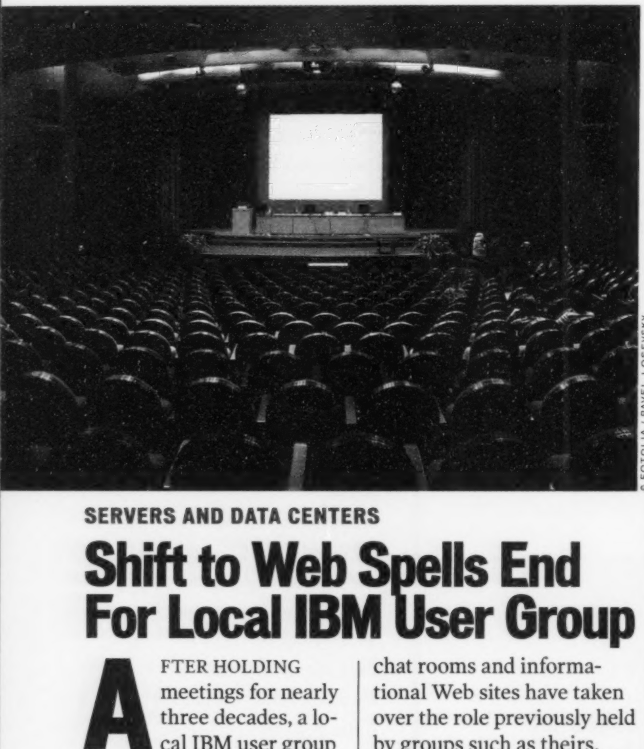
THE WEEK AHEAD

MONDAY: Microsoft opens its Professional Developers Conference in Los Angeles; attendees will be given a "pre-beta" build of Windows 7, the next release of the operating system.

TUESDAY: SAP plans to report its Q3 results, after warning in early October that they would be below expectations. Sun is scheduled to report its results on Thursday (see story below).

FRIDAY: SAP is due to close TomorrowNow, the third-party support unit at the center of a lawsuit filed by Oracle last year.



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SERVERS AND DATA CENTERS

Shift to Web Spells End For Local IBM User Group

AFTER HOLDING meetings for nearly three decades, a local IBM user group in Cleveland disbanded last week — the victim, its board members said, of dwindling attendance driven by the use of the Web to gather and share information.

"People don't need the face-to-face contact anymore," said Andy Gladys, who was the president of the Application Systems Users Group of Greater Cleveland.

In a note to members about the shutdown, Gladys and the two other board members wrote that blogs, chat rooms and informational Web sites have taken over the role previously held by groups such as theirs.

Gladys, a retired IT manager who does consulting work, organized the user group in 1981, after the trucking company where he then worked installed an IBM System/38 midrange computer. The group later focused on the System/38's successor, the AS/400, which evolved into the iSeries and the System i.

In the early days, four or five people would meet at the trucking company to share pizza, beer and their experiences, Gladys said.

Over time, the user group grew and moved its meetings to local hotels, at times drawing as many as 120 people per month. IBM sent employees from its midrange facility in Rochester, Minn., to give presentations.

But about five years ago, attendance began declining, making it harder to get out-of-town speakers. To accommodate them, the group used webconferencing technology. Turnout had fallen to such a low level, though, that the board decided to stop holding the meetings, Gladys said.

The Cleveland group was part of Common, a global user group that focuses on IBM's midrange offerings. Randy Dufault, an IT consultant who is Common's president, said the Chicago-based organization continues to include some very large and strong regional user groups. But the total number of local groups is down a bit, he said.

Common is increasing its scope to include IBM's AIX version of Unix and the Power Systems servers that the vendor announced in April to unify its System i and System p lines from a hardware standpoint.

Dufault said that although online communities have sprung up, users still need the training and advocacy that Common offers.

— Patrick Thibodeau

IT INDUSTRY

Investment Firm Amasses Big Stake in Sun

An investment firm last week said that it now owns 21% of Sun Microsystems Inc.'s stock and that it has been meeting with Sun's management to talk about ways to "maximize the value of the company."

Neither Sun nor Memphis-based Southeastern Asset Management Inc. would elaborate on the meetings. A Sun spokeswoman said only that company officials "welcome feedback from our shareholders and welcome their insight."

> ■ Sun CEO Jonathan Schwartz said the vendor and its customers "are seeing the impact of a slowing economy."

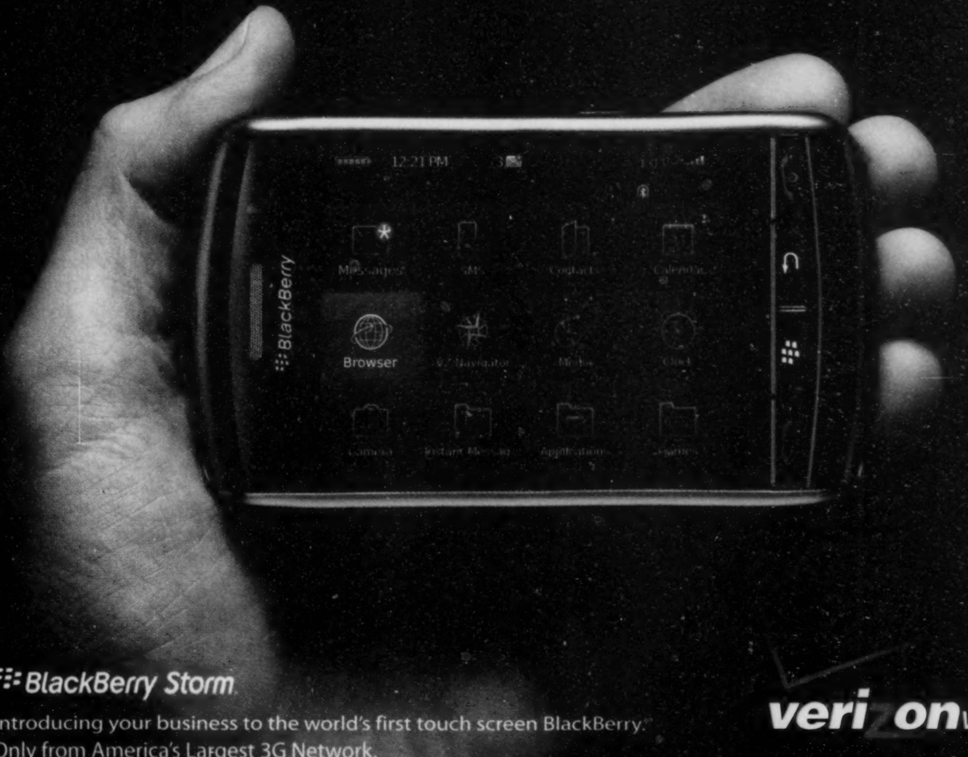
Southeastern held a 10% stake in Sun as of June. In a filing to the U.S. Securities and Exchange Commission that detailed its increased stock holdings, the investment firm also said its ownership status has been changed in a way that allows it to play a more active role in managing Sun.

The filing was submitted to the SEC on Wednesday, two days after Sun warned that it would report a larger-than-expected loss for its fiscal first quarter.

– ROBERT McMILLAN, IDG NEWS SERIVCE

Where is the keyboard? Don't all BlackBerrys have keyboards? This just has a screen that—oh sweet sassafras, did it just click? It clicked right where I wanted it to. Is that supposed to happen? And is it supposed to feel so good?

What mad genius is behind this?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DEVELOPMENT

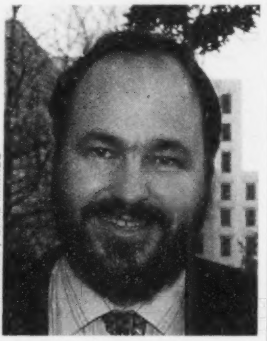
VMware to Realign in Face Of Economic Instability

VMWARE INC. CEO Paul Maritz said last week that a hiring freeze that started in the third quarter will "continue into the fourth quarter, and frankly into 2009 as well."

During a conference call to discuss the company's third-quarter financial results, Maritz also unveiled plans to realign the business to ride out the current worldwide economic instability and to help transform VMware from a start-up to a mature software company.

The company had announced the hiring freeze — or "pause," as Maritz called it — in July. He said last week that it will help VMware "take stock and make sure we have people focused on the right areas."

Maritz said the realignment calls for dividing the company into business units based on product lines, each headed by a senior executive.


GETTY IMAGES / BRAD MARKEL

> **"We don's see [Microsoft] catching up to us until the next 12 to 24 months, by which time we will have moved on.**
> **PAUL MARITZ,** CEO, VMWARE

He wouldn't elaborate on the division plan, except to say that they will have separate research and development groups but will share a common sales and marketing operation.

"We're still working our way through the details; our intent is to have [the realignment] ready and implemented as we go into 2009," Maritz said.

The moves come despite solid third-quarter results — revenue of $472 million, up 32% from the same period last year, and profits of $83.3 million, up from $64.7 million in 2007.

As for next year, Maritz said that "it's too soon to say what will happen in 2009" in terms of customer spending.

Meanwhile, VMware's majority owner, EMC Corp., reported that its third-quarter revenue grew 13% to $3.7 billion. EMC's profits for the quarter totaled $411 million, down from $493 million during the same period last year.

In a conference call after the results were released, EMC President and CEO Joe Tucci said that the stock-market meltdown and the weak credit market caused some big companies to postpone purchases in late September. Tucci added that he expects IT spending to grow between 1% and 3% in 2009.

EMC is forecasting fourth-quarter revenue of $4 billion, up from $3.8 billion last year.

— James Niccolai and Stephen Lawson, IDG News Service

Short Takes

- Microsoft Corp. has issued an emergency patch to fix a critical Windows bug that online criminals could use to conduct a widespread worm attack. The company said the vulnerability is being exploited in "limited targeted attacks."

- At its Information on Demand conference in Las Vegas today, IBM plans to unveil a new business intelligence consulting program, two new InfoSphere Balanced Warehouse products, and seven performance management and financial offerings .

- SAP AG's venture-capital arm, The McGraw-Hill Companies Inc. and Goldman Sachs Group Inc. jointly invested $22.7 million in LinkedIn Corp., which runs a social networking site for businesspeople.

- IBM has rolled out its first hosted Lotus Notes service, which the company said is part of its effort to take on Microsoft's hosted Exchange offering. Pricing for the Notes service starts at $8 per user per month.

INTERNET

Google Apps Glitches Show Stormier Side of Cloud IT

Google Inc. last week resolved a technical problem that prevented new Google Apps subscribers from accessing their Gmail accounts – the latest in a string of snafus that have irked some systems administrators whose companies are using the online applications suite.

"This is a major problem for many of us, especially those that have sold the idea that e-mail in the cloud is better than anything else out there," one sysadmin wrote in a post on the vendor's Google Apps discussion forum. "We look really bad to our clients/bosses right now."

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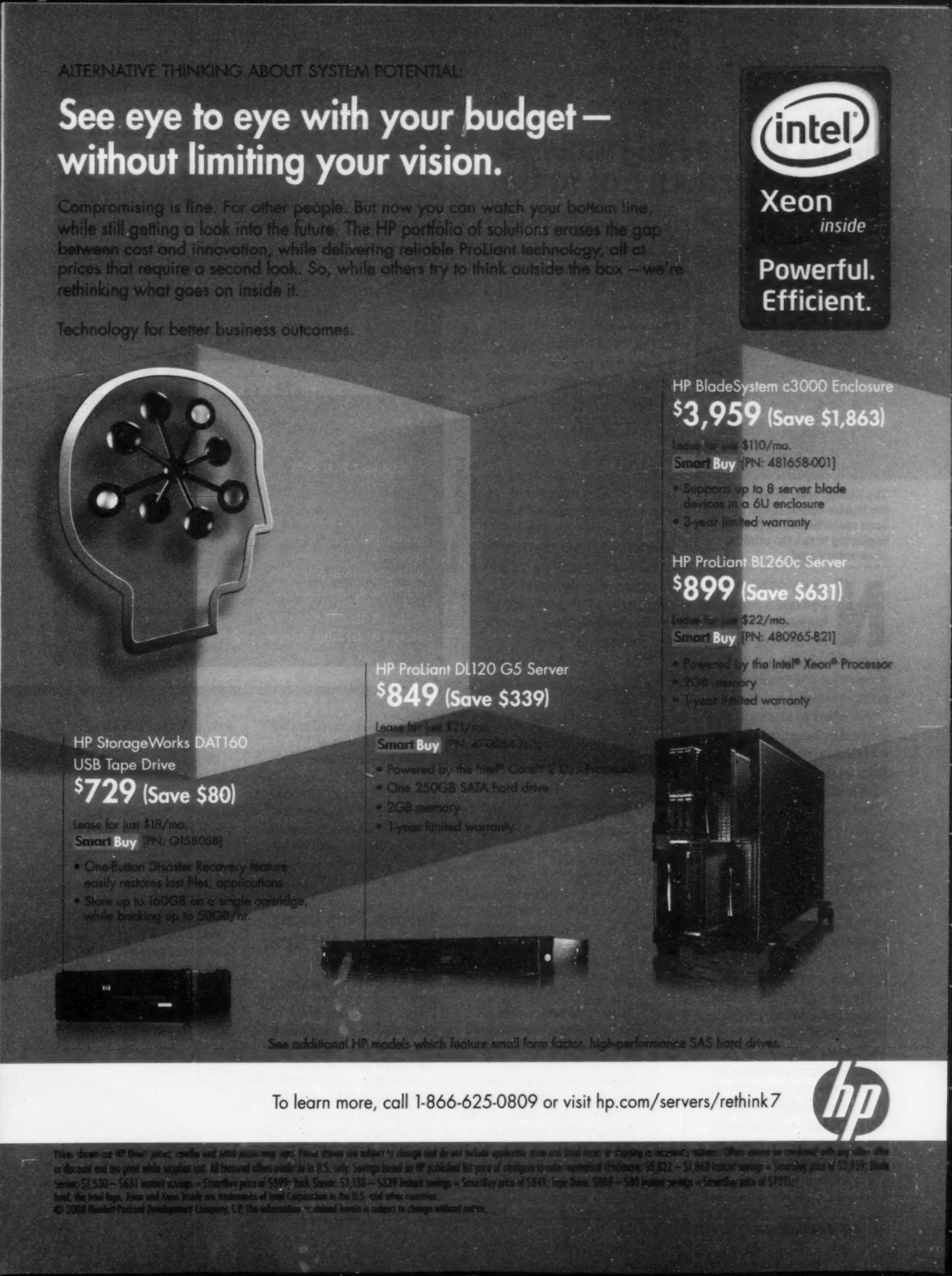
The Gmail problem began late on Friday, Oct. 17, causing the account activation process to take longer than the usual 48 hours. Google acknowledged the problem last Monday, but work on a fix wasn't completed until Wednesday night.

In a forum post, a Google representative apologized to customers and said that system reliability "is a top priority" at the company, which guarantees 99.9% uptime on Gmail for users of its fee-based Google Apps Premier Edition.

The activation glitch closely followed a separate problem two weeks ago that left some existing Gmail users unable to log into their accounts for about 30 hours. That same week, another bug caused the Start portal pages of some Google Apps customers to malfunction for 16 hours.

– JUAN CARLOS PEREZ, IDG NEWS SERVICE



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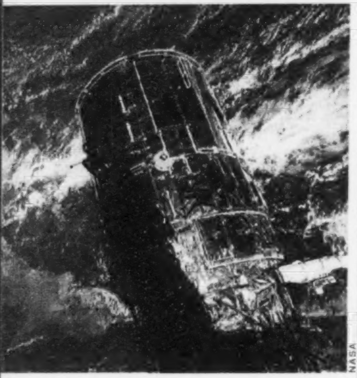
NEWS DIGEST

HARDWARE

NASA Is Hopeful Hubble's Backup System Set to Go


NASA

The backup computer aboard the Hubble Space Telescope has been restarted and is gradually beginning to run the orbiting observatory again.

NASA SCIENTISTS late last week were hopeful that the latest attempt to fire up the Hubble Space Telescope's long-dormant backup computer will be successful.

An effort to start the system a week earlier was halted because of two "anomalies," said Art Whipple, chief of NASA's Hubble systems management office at the Goddard Space Flight Center in Greenbelt, Md.

Whipple said the main systems on the 18-year-old orbiting observatory were running smoothly late last Thursday, shortly after the backup computer was restarted.

He noted that the scientific instruments will remain in safe mode while NASA engineers gauge how the main system is holding up.

The agency hoped to take the first such instrument — a camera — out of safe mode over this past weekend, Whipple said. Another piece of equipment, the Advanced Camera for Surveys, is slated to be taken out of safe mode later this week, he added.

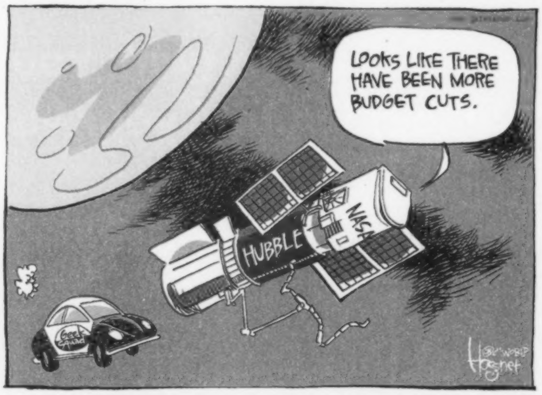
Whipple said that at least one of the two anomalies was a "transient" event that likely stemmed from the fact that the backup system has been sitting idle for the 18 years it has been hurtling around Earth at 17,500 mph.

"There doesn't appear to be any permanent damage," Whipple said.

The agency was forced to turn to the backup system after the failure of an onboard computer that had been online since the launch of the Hubble in 1990. That computer was designed by IBM in the 1970s and built by the former Fairchild Camera and Instrument Corp.

— Sharon Gaudin

BETWEEN THE LINES *By John Klossner*


LOOKS LIKE THERE HAVE BEEN MORE BUDGET CUTS.
HUBBLE
NASA
Geek Squad

BENCHMARKS LAST WEEK

After a two-year beta period, Amazon.com Inc. said its Elastic Compute Cloud service is ready for production uses. It also added a service-level agreement that promises 99.95% uptime for EC2.

T-Mobile USA Inc. started selling its G1 smart phone, the first handheld based on Google Inc.'s Android software. Also, Google made the Android source code openly available.

ONE YEAR AGO: Apple Inc. launched Mac OS X 10.5, an operating system upgrade more popularly known as Leopard.

Global Dispatches

Judge Demands Settlement Plans From SAP, Oracle

WALLDORF, Germany – A U.S. federal judge last week ordered SAP AG and Oracle Corp. to submit proposals for settling Oracle's lawsuit against SAP's TomorrowNow Inc. subsidiary by mid-February.

Oracle sued SAP last year, claiming that employees at TomorrowNow, a provider of third-party support services for various Oracle products, illegally downloaded material from Oracle's support systems.

SAP has acknowledged that TomorrowNow workers made "inappropriate downloads," but it denied Oracle's claims of a wider pattern of malfeasance. SAP has since moved to shut down TomorrowNow.

Judge Joseph Spero ordered Oracle to submit a "specific dollar demand" by Feb. 13 and for SAP to file a counterproposal by Feb. 18. A settlement conference is scheduled for Feb. 23.
Chris Kanaracus,
IDG News Service

Unions Plan Joint Protest of HP Cuts

LONDON – Trade unions across Europe are planning a joint protest of Hewlett-Packard Co.'s plans to cut thousands of jobs worldwide – including 9,300 in Europe, the Middle East and Asia.

Peter Skyte, national officer at U.K. union Unite, said labor organizations across Europe are planning a "coordinated day of union activities" on Nov. 13. He said London-based Unite opposes any compulsory layoffs and wants to be consulted on HP's plans.

HP announced in September plans to cut 24,600 jobs, or 7.5% of its global workforce, as part of a restructuring after its purchase of Electronic Data Systems Corp.
Computerworld U.K. staff

BRIEFLY NOTED

Service and Computer Industries Ltd. in Kampala, Uganda, has signed an agreement to resell computers made by HCL Infosystems Ltd. in New Delhi. SCI will distribute Vista-based laptops and desktop computers with preinstalled antivirus software from Kaspersky Lab.
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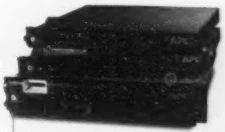

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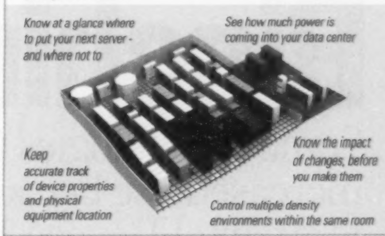
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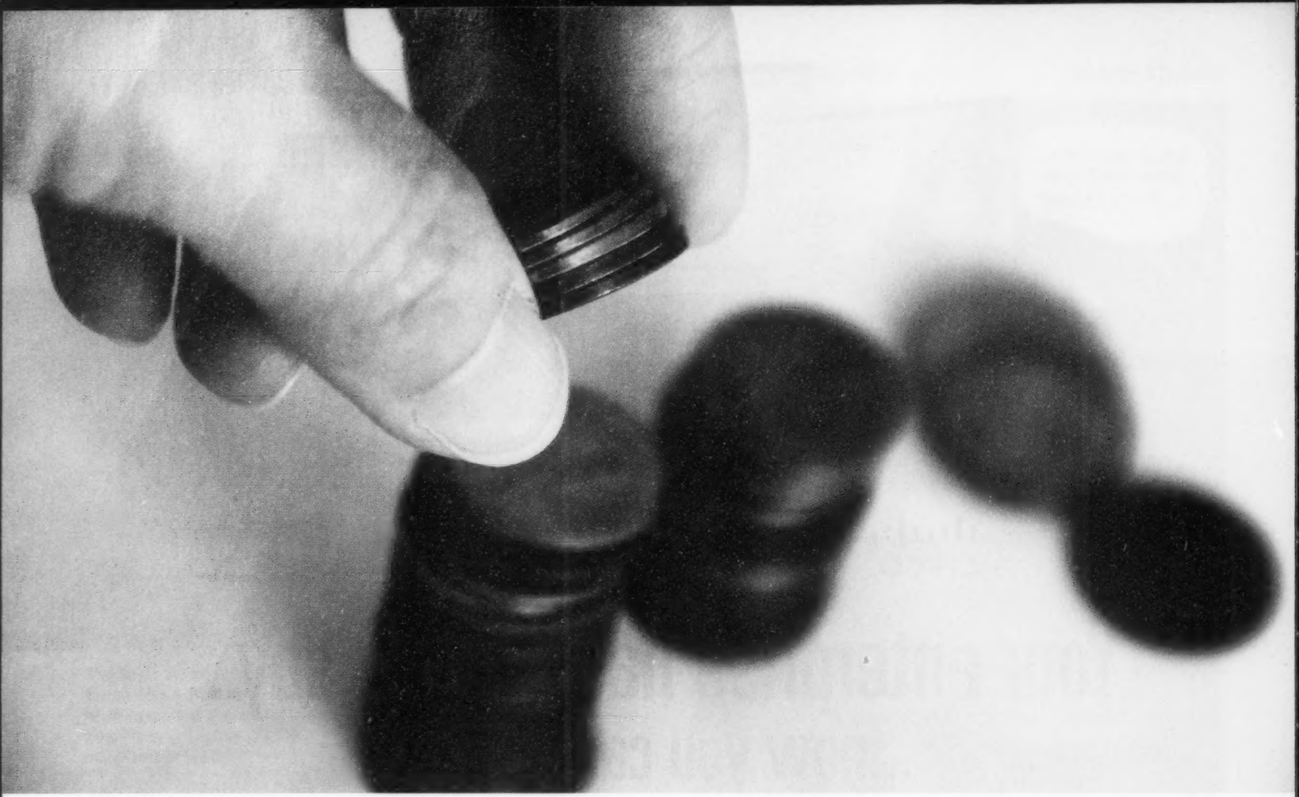

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■ NEWS ANALYSIS

Economy Puts IT Into Penny-Pinching Mode

Some technologies (think SaaS) may see increased use because of the downturn. But for many IT execs, scrimping on spending is now the order of the day.

By Patrick Thibodeau

WITH the economy struggling and financial markets in a state of chaos, this is becoming a hard time to be an IT manager.

Possible staffing reductions topped every how-to-survive-the-recession list that Gartner Inc. analysts presented at the consulting firm's Symposium/ITxpo conference in Orlando this month. They said IT execs should prepare for measures such as hiring freezes, job cuts and the elimination of management layers.

And while Gartner still expects IT spending to grow by small amounts this quarter and during 2009, projects with high price tags and lengthy returns on investment may be a hard sell internally. Caution will likely be the watchword at many companies — for IT as well as other departments.

IT managers can try to push back by demonstrating that technology investments can make a difference for their organizations from a business or financial standpoint. For instance, state and local governments hurt by tax-revenue declines may be able to offset some of the lost income by expanding online self-service capabilities on their Web sites.

Also, there is expected to be continued demand for storage technologies and for business intelligence tools that can help users evaluate spending plans and business risks. Ironically, demands on IT may grow because of spending cuts. For instance, if PC replacements scheduled for next year are put off because of economic concerns, help desk calls from

Continued on page 14

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> **“The business is still expecting IT to deliver, so without having the money to do it, you have to find creative ways.**
>
> **BLAIR MANDRYK,** GLOBAL IT MANAGER, HAWORTH INC.

Continued from page 12

users will likely increase.

New technologies that can help companies avoid hardware upgrades and other capital-equipment costs — for example, cloud-based software-as-a-service (SaaS) offerings or server virtualization software — also may get more attention.

The University of Cincinnati is adopting a SaaS strategy for e-mail, according to Mark Young, the school's infrastructure manager. Young said the university is close to signing an agreement with Microsoft Corp. to use the vendor's Exchange Labs hosted e-mail service instead of its current messaging system from Mirapoint Software Inc.

Switching to the Microsoft service is attractive partly because it promises to deliver immediate financial benefits, Young said. Microsoft, which offers Exchange Labs to colleges as part of its free Live@edu suite of collaboration tools, will take care of storage costs and some of the other expenses of providing e-mail to the university's users. That will let the school reduce its spending on hardware and systems administration and free up IT staffers to do more productive work.

But on other IT initiatives, Young said, the university plans to proceed cautiously and watch what other schools do to see “what saves money and what doesn't.”

Blair Mandryk, global IT manager at Haworth Inc., a Holland, Mich.-based office furniture maker, had been looking to cut his technology costs long before the recent economic events began unfolding. For instance, his staff previously reduced 450 physical servers down to 100 boxes through the use of VMware Inc.'s virtualization software.

But nowadays, Mandryk said, IT managers also have to find ways to expand services to end users without necessarily being able to increase their tech budgets. “The business is still expecting IT to deliver, so without having the money to do it, you have to find creative ways,” he said.

Mandryk predicted that SaaS “is going to be a huge trend,” partly as a result of the economic downturn. A year ago, he wouldn't have considered SaaS technologies himself. Six months ago, “probably yes,” he said — and now, “absolutely.”

USE WHAT YOU HAVE

Since many companies are likely to put off IT upgrades until the economy improves, another strategy for coping with the downturn is to get the most out of what you already own.

Chris Mincay, an IT procurement manager at a grocery chain that he asked not be identified, said he's looking at ways to make better use of the applications that he himself relies on as part of his job. “Sometimes applications are so sophisticated that you only use a certain percentage of [their capabilities],” he said.

Scotty Bryan, CIO of the Kentucky Higher Education Assistance Authority in Frankfort, is trying to trim IT costs wherever he can — a process that began earlier this year when credit tightening put a big crimp in the student loan business.

The IT Future, According to Gartner

Each fall, Gartner releases a list of what it considers to be the Top 10 strategic technologies for the following year. Because of the economic concerns, the list for 2009 “places particular emphasis on cost savings and impact on ‘run the business’ activities,” analyst David Cearley wrote in a blog post.

1. Virtualization
2. Business intelligence
3. Cloud computing
4. Green IT
5. Unified communications
6. Social software and social networking
7. Web-oriented architectures
8. Enterprise mashups
9. Specialized systems (i.e., appliances)
10. Server provisioning by resource type (processor, memory and I/O)

According to Bryan, the authority's IT department has been managing disks better to increase the available storage capacity, getting rid of software modules that aren't being used and shifting users to electronic documents to cut down on paper consumption. Job vacancies in IT aren't being filled, and purchases are being reviewed much more closely than before, he said.

At the Service Employees International Union in Washington, CIO Charles Everett said he expects to be asked to help find ways to cut overall operating costs. SaaS is an option, he said, although he isn't sure it would cost less in the long term compared with continuing to run software in-house.

“I think [SaaS] is always going to be more pricey than doing it ourselves, but we will see,” said Everett, who is also looking at increased IT automation as a potential cost-saving option.

Not everyone is cutting back. John Chambers, CEO of Cisco Systems Inc., said during a Q&A keynote session at the Gartner conference that he plans to increase the networking vendor's IT spending by 10% next year, regardless of what happens to the economy. Economic slowdowns can be used to “gain huge competitive advantage” by companies that see IT as “the enabler of business strategy,” Chambers said.

After the keynote session and in interviews conducted with IT managers near TV monitors that showed a CNN report on yet another Wall Street sell-off, it was impossible to find anyone as enthusiastic as Chambers about the potential for moving ahead so aggressively on IT investments.

But harsh economic conditions may make possible some IT actions that were off the table in more flush times. For instance, John McLatchey, an enterprise architecture planner at a health care company that he asked not be identified, said the thinking in his group is to try to push through changes that may have been politically difficult before, such as getting rid of legacy systems that are expensive to maintain. “Let's use this as an opportunity,” he said, describing the internal view.

Miguel Gascon, CIO at Panama-based Global Bank Corp., is taking a much more basic step — one that goes to the heart of the new financial cautiousness. Gascon said he plans to make invoice verification a higher priority in his department, in order to make sure that IT vendors' bills are correct and meet the terms of their contracts. ■

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IT Wary of Insider Attacks As Economy Slows Down

Disgruntled employees and ex-workers pose increased threats to corporate systems.

By Jaikumar Vijayan

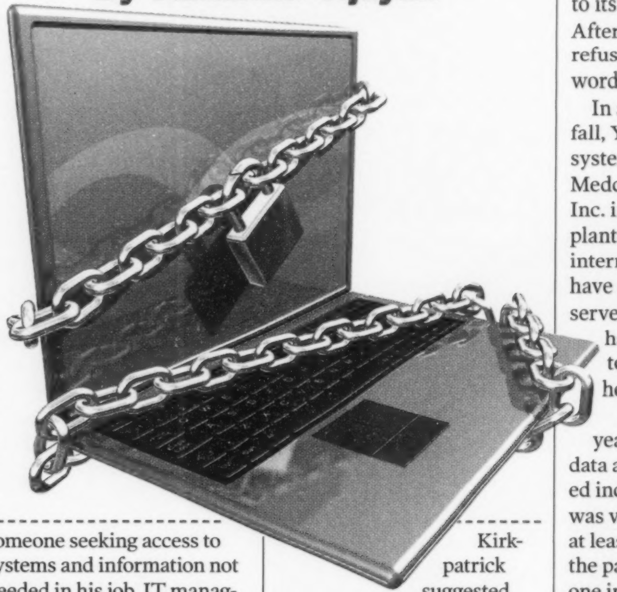
ABOUT A YEAR AGO, a senior manager at Pilz GmbH left the company to work at a rival firm — and took some classified data about an unfinished vision-based camera safety system with him.

If it hadn't been for the honesty of executives at the rival business, more than five years of research and development work would have gone down the drain, said Steve Farrow, managing director at Pilz, which is in Ostfildern, Germany. "It would have impacted our product development and allowed one or two competitors to catch up with us much more quickly," he said. Farrow didn't identify the rival company.

The incident is a classic example of the threat rogue insiders pose to your data and systems at any time. But as the faltering economy forces companies to turn to job cuts, wage and bonus freezes, outsourcing and other belt-tightening moves, the risks are multiplying, analysts said.

"All of these [cost-cutting measures] increase risk for the company from an insider perspective," said Shelley Kirkpatrick, director of assessment services at Management Concepts Inc., a consulting firm in Vienna, Va. "When there is uncertainty, it creates stress for employees [and] makes the company more vulnerable."

Thus, corporate executives must be very vigilant, especially today, in learning what warning signs to look for and how to respond to them, said Matt Doherty, a senior vice president at Hillard Heintze LLC, a Chicago-based security consulting firm.



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Red flags could include an employee who suddenly starts working long hours for no obvious reason, or someone seeking access to systems and information not needed in his job. IT managers should also be on the lookout for employees who print out large volumes of data after hours or who send information to themselves via e-mail.

Doherty also said it's important that companies train supervisors to spot distressed employees. "It's critical for a supervisor to be aware of the employees — who they are and what's going on in their lives. It's really about keeping a finger on the pulse," he added.

Kirkpatrick suggested that companies set up a cross-functional team consisting of IT, human resources, corporate security, legal and operations department managers to quickly deal with potential insider attacks.

"There are [often] warning signs. But they are not always listened to," she said.

Ted Julian, vice president of marketing at Application Security Inc., a New York-based vendor of security tools, added that companies should have controls to monitor privileged user activity to make sure managers and technology professionals with elevated access rights don't "rob you blind."

"Some sort of monitoring on your most sensitive systems is a must," he said.

Several recent incidents show that the threat of data theft from insiders with privileged access should not be underestimated.

In July, Terry Childs, a disgruntled administrator working for the city of San Francisco, locked access to a critical network by resetting administrative passwords to its switches and routers. After he was caught, Childs refused to divulge the passwords for days.

In a similar incident last fall, Yung-Hsun Lin, a Unix systems administrator at Medco Health Solutions Inc. in Franklin Lakes, N.J., planted a logic bomb on an internal system that would have deleted data on 70 servers if it had gone off. Lin had feared he was going to be laid off from the health care provider.

Farrow noted that last year's theft of confidential data at Pilz was not an isolated incident — the company was victimized by insiders at least two other times over the past couple of years. In one incident, minutes from a confidential board meeting were leaked to a major competitor, Farrow said.

The maker of automation technology has since deployed an enterprise rights management tool from Waltham, Mass.-based Liquid Machines Inc. to better limit access to confidential documents and control how that data can be used.

Analysts said that unless IT managers further beef up their defenses, such incidents are likely to continue. ■

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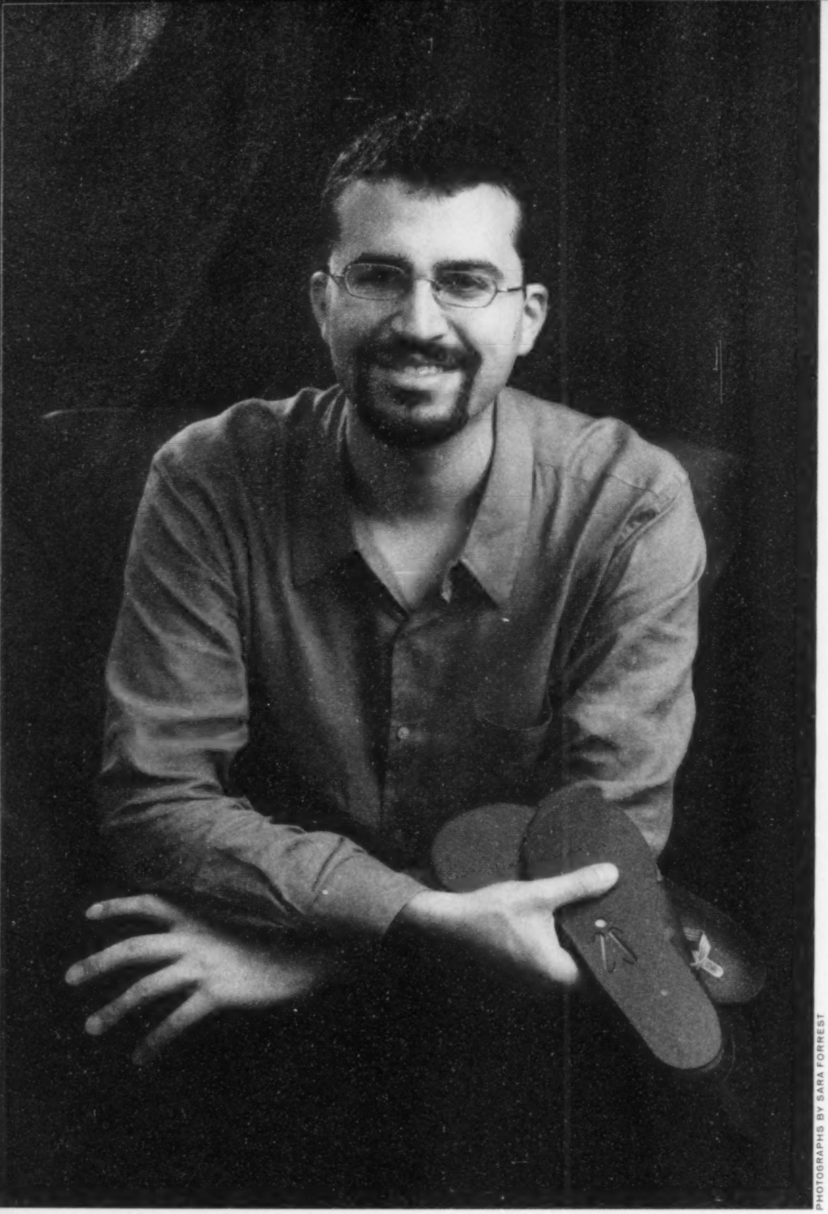

PHOTOGRAPHS BY SARA FORREST

THE GRILL

Erez Lieberman

The **computational pioneer** talks about how the Web — and **spam** — evolves, why **programming** languages are different from **human** languages and how the **iShoe may save grandma's life.**

Dossier

Name: Erez Lieberman

Title: CEO, iShoe; Hertz Fellow, Harvard-MIT Division of Health Sciences and Technology

Location: Cambridge, Mass.

Favorite nonwork pastime: Conserving energy.

Philosophy in a nutshell: "The only thing better than knowing what you're doing is not knowing what you're doing."

Favorite vices: Miami, Al Gore, puns.

Favorite technology: Lebônê's dirt-powered battery.

Erez Lieberman has done pioneering work on mathematical and computational approaches to the study of evolution, including the evolution of networks and languages. His newest endeavor is the development of the iShoe, to assist elderly people with balance problems.

What inspired the iShoe, and how exactly does it work? I first began to understand how big a problem falls are for the elderly when my grandmother passed away shortly after a catastrophic fall. Tragically, a quarter of senior citizens fall down, leading to 300,000 broken hips; about 30% of those victims do not survive the year, and many others never regain their mobility. The iShoe insole looks like an ordinary insole, but it is actually a wearable sensor system that tracks how a person distributes pressure in their feet and can transmit the results wirelessly to any Bluetooth device. This enables us to tell how well a person is balancing so that doctors and caregivers can intervene before a catastrophic fall.

I understand that NASA has become interested. Why? Because there's no gravity, space flight can compromise an astronaut's ability to balance and to do things like sense which way is down. That's an operational issue for NASA, so they actually use some of iShoe's technology.

How does the development of technology like this affect the future of medicine

Continued on page 20

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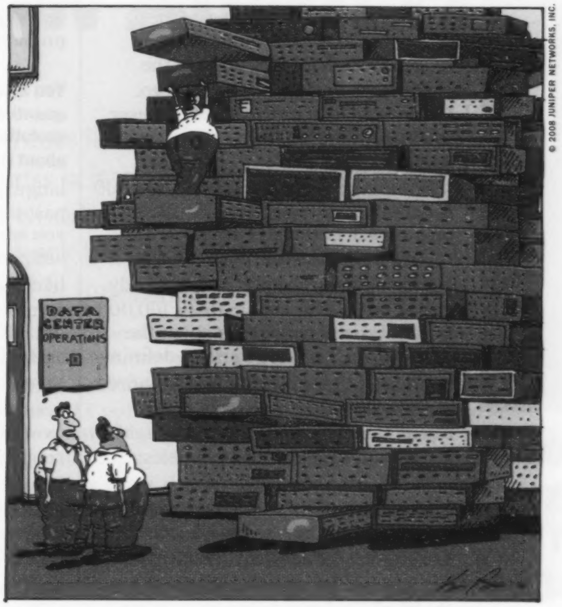

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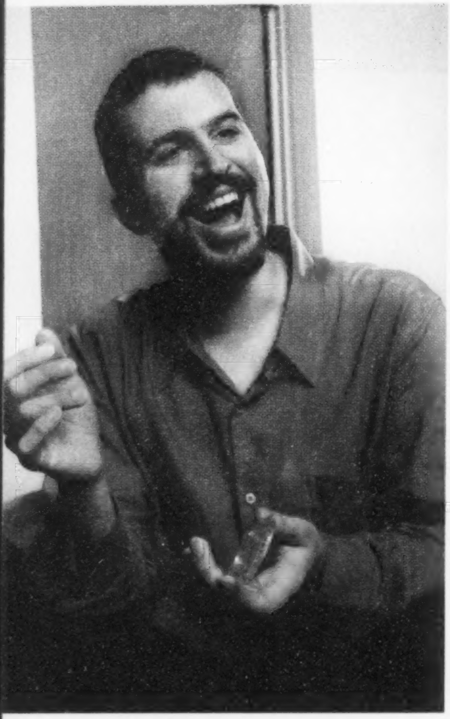


> **“An iShoe collects enough data every minute to overload the hard drive on my first computer.**

Continued from page 18

and health care? Even in *Star Trek*, all medical evaluations seem to happen in the presence of a doctor (even if the doctor is a hologram). Wearable diagnostics have the potential to transform a person's clothing into a platform for remotely monitoring their health. Doctors will be able to supplement in-office visits with continuous care. Telemedicine is not just about long-distance consultation; it's about being able to detect and respond to a problem in real time, no matter where your patient is located. When we eventually know how to build the [*Star Trek* starship] *Enterprise*, Picard won't need to visit Crusher to find out what's wrong; she'll pick up the signs remotely.

In general, how does biology benefit from the Computer Age? An iShoe collects enough data every minute to overload the hard drive on my first computer. Whether you're studying human physiology or the mouse genome, 21st-century computation gives us the agility to handle huge data sets and to capture at least a fraction of the complexity that makes humans go. Computers help us think about messy systems, and biology is a very messy system.

For instance, there are about 100,000 different antibodies in a milliliter of blood. Each of those is designed to recognize a different molecule that could cause disease so that your body can eliminate the threat; that's 100,000 magical cures! Now think about the bits: Just the genetic sequence defining these antibodies is a couple of hundred megabytes worth of data. Without modern computers, understanding the immune system would be hopeless.

Your studies of evolution on networks are now being used by researchers examining social networks and the Internet. What does it mean for evolution to take place on the Web? Evolution takes place wherever there is a population undergoing mutation and selection. The population usually comprises living things, like Darwin's finches or Mendel's peas. But not always. For instance, you can think about spam e-mails as an evolving population. Just like viruses, which mutate their genome in order to disguise themselves from the immune system, spam e-mails incorporate typos like V1@gR@ to try and disguise themselves from spam filters. Now all this mutant spam gets sent out, and the e-mails that get the pitch across to the human reader while avoiding the spam filter will get reused in the future. That's a form of selection. Population-mutation selection: Even spam evolves.

FOR MORE on how computational technology is changing science, **see this week's cover story on page 22.**

How did your work shed light on this phenomenon? Evolutionary graph theory, which I developed with [Harvard professor] Martin Nowak, helped scientists understand how the shape of a network affects how evolution takes place inside of it. In some networks, the effects of selection can be minimized; for instance, these types of structures can help the body avoid cancer. There are some very beautiful classes of networks where the reverse is true: Natural selection can become an overpowering force. The Web is probably a bit more like the latter.

You also discovered one of the first quantitative principles describing the evolution of language. Tell me more about that. Sure. Verbs in the English language can be conjugated into the past tense in one of two ways: either you add *ed* (regular verbs like jump/jumped), or you don't (irregular verbs like go/went). The regular *ed* ending is actually a new rule that has emerged in the Germanic languages. Irregular verbs, in contrast, are usually fossils of really old rules. You can notice this, because many irregulars are similar to each other; think of sing/sang and ring/rang. As the -ed rule continues to make inroads, irregular verbs are becoming regular. For instance, the past tense of *help* was *holp* centuries ago. We showed that the half-life of an irregular verb scales as the square root of its usage frequency; in simpler terms, an irregular verb that is 100 times less frequent regularizes about 10 times as fast. That's why if you look at the 10 most frequently used verbs in the English language — be, have, do, go, say, can, will, see, take and get — you find that they're all still irregular: They are so frequently used that they can survive for millennia without regularizing.

Do programming languages like C++ evolve in the same way? There are very big differences. If a lot of users start to violate some rule of English grammar, those people can still communicate. If a lot of users violate some element of the syntax of C++, the program won't work at all. Ordinary practitioners can't directly change the conventions of a programming language.

— *Interview by* **Sara Forrest**

■ OPINION

Thornton A. May

What 'Suits' Need To Know About IT

AFTER 25 years in this industry, after teaching at four business schools, researching for three think tanks and working at five consultancies, I had an insight last week that may seem forehead-slappingly obvious when you read it: Ignorance of IT destroys value.

If the full value is to be extracted from every IT dollar spent, high-level executives have to know "things" about technology. As a knowledge-deficit kind of guy — that is, as someone who studies the effects of ignorance on organizational performance — I'm interested in figuring out what things need to be known about technology and who needs to know them.

When the World Changes, Shouldn't You Change With It? First, line-of-business executives are going to have to evolve. The world is changing, and if they want to survive, they will have to come down from the trees and learn to walk erect on the savannah of digitally enabled enterprises that have been transformed by globalization, Web 2.0 technologies and functionality delivered via the Internet. Not only do they need to know something about IT, but they also have to be perceived as knowledgeable.

And that knowledge has to be personal; it won't be enough to have sufficient tech knowledge to hire smart IT professionals. How fast is the environment changing? Very, very fast. President Clinton was famously technologically challenged, and he could get a laugh in 2000 telling an audience in Hyderabad, "When I was a young man, chips were something you ate, windows were something you washed, disks were part of your spinal column that when you got older often slipped out of place, and semiconductors were frustrated musicians who wished they were leading orchestras." In 2008, the laughter had a different tone when John McCain confessed that he had "never felt the particular need to e-mail." And even though some may have credited McCain with hiring technologists who are more savvy about the Web, business intelligence and search-engine optimization than those working for his opponent, he still lost some credibility by exhibiting his personal tech shortcomings.

■ You aren't going to get away with just hiring smart IT folks.

So, you aren't going to get away with just hiring smart IT folks — you have to be IT smart as well. The days of IT people serving as data valets for high-level "suits" are over.

You Have to Master the Basics... Business executives need to understand what it takes and what it costs to provide base-level computational functionality. That functionality needs to be secure, scalable and unquestionably reliable. I believe we're entering a 15-year window of unprecedented opportunity to create competitive advantage with technology. The companies that will gain from this will be the ones whose IT teams won't have to crawl out from under the ambition-crushing, innovation-sucking, soul-destroying minutiae of merely keeping the digital lights on.

... And Practice Your Technology Stagecraft. Technology makes entrances and exits, and business executives have to be able to stage-manage them. They have to master the four primary areas of technology application — data collection, data movement, data analysis and knowledge dissemination — and determine where these clusters are today, where they are heading and how emerging developments can be exploited. In short, they need to ensure that a rich array of high-quality technology alternatives is examined and that they invest in the right ones at the right time.

Executives have to wake up to the fact that technology has become extremely important to people, and that its importance will only grow. To see evidence of this, they need only read a recent news report about a woman in Nova Scotia who was so frustrated by her Internet service provider's failure to restore her Internet connection that she allegedly threatened to hold a technician hostage until she was back online. If you find that reaction incomprehensible, you are out of touch and should be out of tech. ■

Thornton A. May *is a longtime industry observer, management consultant and commentator. You can contact him at thorntonamay@aol.com.*

■ **COVER STORY**

The Computer as Collaborator

IT'S NOT JUST A TOOL SERVING SCIENCE ANYMORE. IT'S BECOMING A PART OF THE SCIENCE. BY GARY ANTHES

COMPUTER SCIENCE — it's not just about hardware and software anymore.

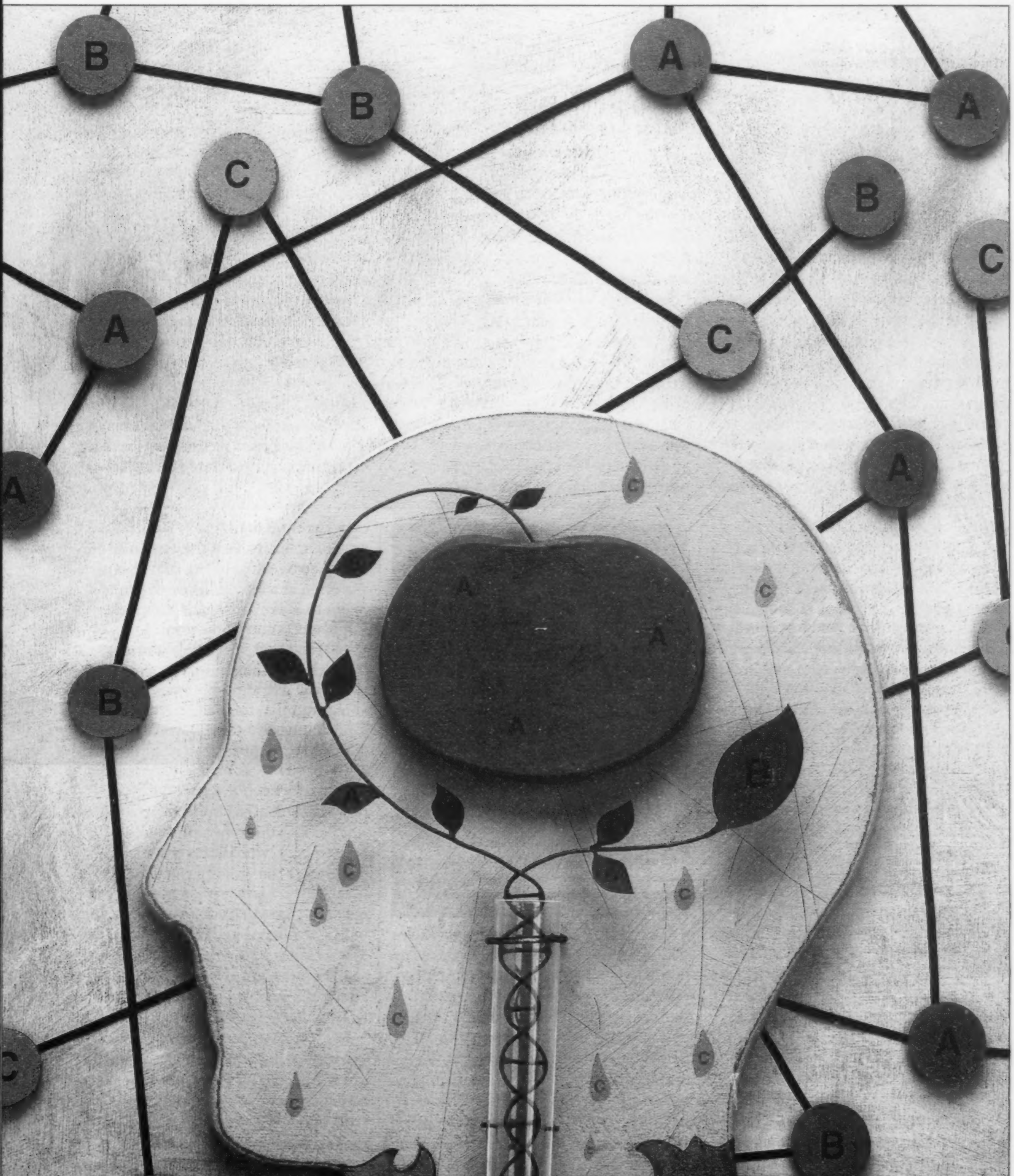
It's about oceans, stars, cancer cells, proteins and networks of friends. Ken Birman, a computer science professor at Cornell University, says his discipline is on the way to becoming "the universal science," a framework underpinning all others, including the social sciences.

An extravagant claim from someone with a vested interest? The essence of Birman's assertion is that computers have gone from being a tool serving science — basically an improvement on the slide rule and abacus — to being part of the science. Consider these recent developments:

Ken Birman

MARIA RENDON

- "Systems biologists" at Harvard Medical School have devel-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Big Things From Little b

The Little b language developed at Harvard Medical School is a Lisp derivative tailored for biological work. It maintains a library of "assertions" about biological processes and uses an expert system kernel called Lisa to tell the language what to do in various situations. It might recognize, without the user or programmer telling it, that because Enzyme E is in proximity to Chemical A in some experimental data, it is likely to produce Chemical B. It might then go on to deduce additional outcomes from the presence of Chemical B, says Jeremy Gunawardena, a mathematician and the director of the Virtual Cell Program at the school.

In addition to these assertions, or rules, Little b uses a database of reusable templates, a little like subroutines, that relieve the researcher and the programmer of the need to specify common biological scenarios each time they are encountered. Says Gunawardena, "In the past, we have not been able to abstract those generic components, so we have to keep re-describing the wheel every time we see it."

Aneil Mallavarapu, the chief developer of the language and director of the Little b program at Harvard, has degrees in biochemistry and cell biology but now considers himself a computer scientist. "I learned that independently," he says. "My father gave me a computer when I was very young and the games were terrible, so I started programming."

As a graduate student in biology, he was unhappy with available research tools, just as he had been with computer games earlier. "My understanding of how software engineers handled complexity really made me start thinking about how biologists might handle it," he says. He says he designed Little b for cell biology but with the idea in mind that its basic concepts – its core language idioms, symbolic math and object-oriented definitions and reasoning – might also be applied to complex disciplines such as economics or ecosystems.

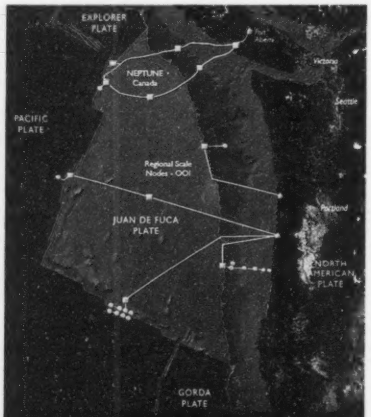
Mallavarapu says computer science may be even more important to biology than mathematics. "Biologists are expected to understand sines and cosines and all kinds of weird trigonometric functions as a standard part of the canon," he says. "But we don't have that attitude toward computer science, which is arguably much more fundamental than a lot of the mathematics that we get taught."

– GARY ANTHES

oped a "computational language" called "Little b" for modeling biological processes. Going beyond the familiar logical, arithmetic and control constructs of most languages, it reasons about biological data, learns from it, and incorporates past learning into new models and predictors of cells' behaviors. Its creators call it a "scientific collaborator."

■ Microsoft Research (MSR) is supporting a U.S.-Canadian consortium building an enormous underwater observatory on the Juan de Fuca Plate off the coast of Washington state. Project Neptune will connect thousands of chemical, geological and biological sensors on more than 1,000 miles of fiber-optic cables and will stream data continuously to scientists for as long as a decade. Researchers will be able to test their theories by looking at the data, but software tools that MSR is developing will search for patterns and events not anticipated by scientists and present their findings to the scientists.

■ Last year, researchers from Harvard Medical School and the University of California, San Diego, used statistical analysis to mine heart-disease data from 12,000 people in the Framingham Heart Study and learned that obesity appears to spread via social ties. They were able to construct social networks by employing previously unused information about acquaintances that had been gathered solely for the purpose of locating subjects during the 32-year study.



An enormous underwater observatory to be built on the Juan de Fuca Plate off the coast of Washington will use thousands of sensors to stream data continuously to scientists.

■ Computer scientists and plant biologists at Cornell developed algorithms to build and analyze 3-D maps of tomato proteins. They discovered the "plumping" factor that is responsible for the evolution of the tomato from a small berry to the big fruit we eat today. Researchers then devised an algorithm for matching 3-D shapes and used it to determine that the tomato-plumping gene fragment closely resembles an oncogene associated with human cancers. That work would have taken decades without computer science, researchers say.

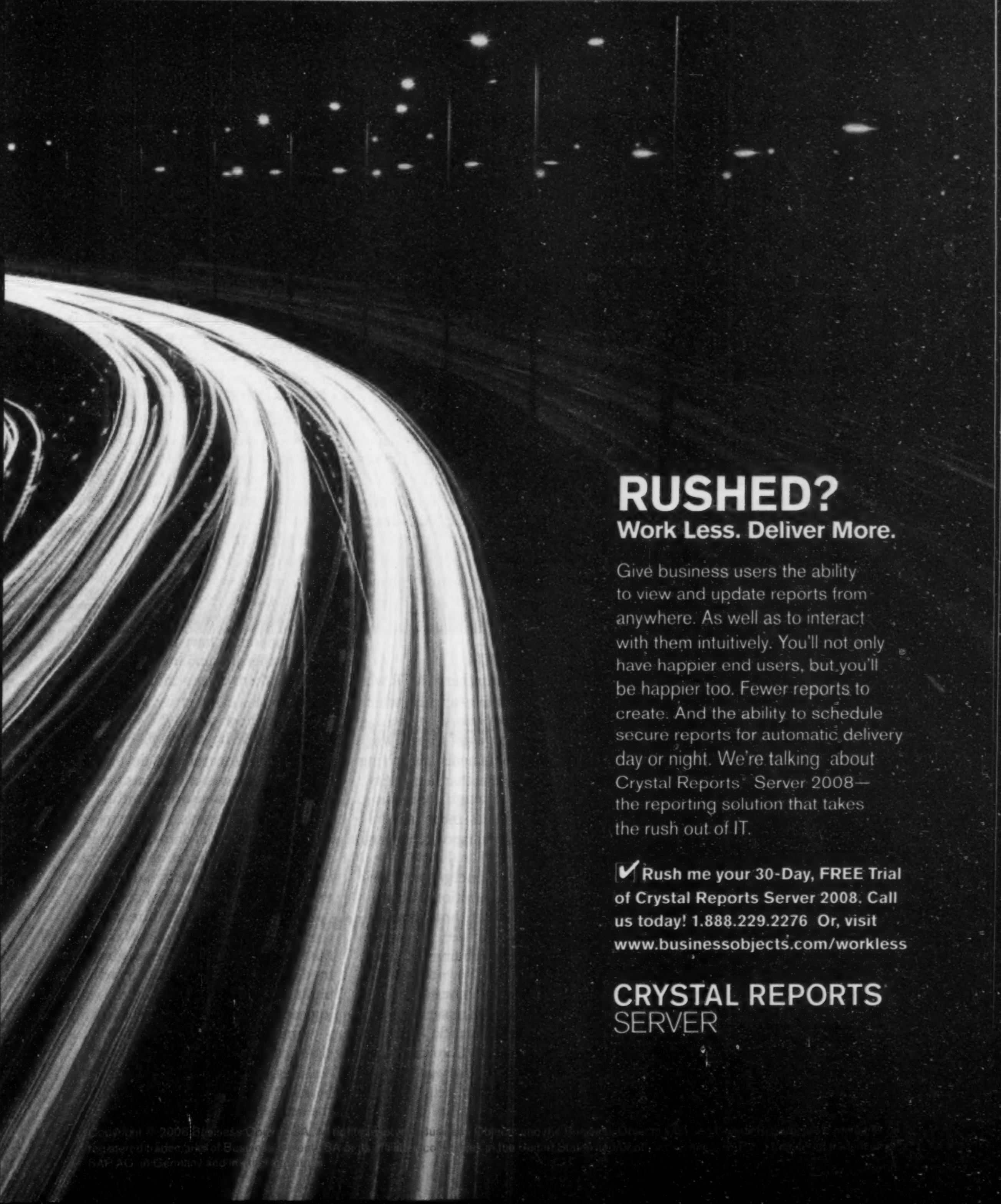
While these applications might seem to have little in common, they represent a class of scientific problems involving experimental data that is voluminous and complex. In fact, the raw information is so overwhelming that scientists are often at a loss to know where to begin to make sense of it. Computer science is pointing the way.

"A trend that is becoming increasingly clear is that computer science is not just a discipline that provides computational tools to scientists," says Jon Kleinberg, a Cornell professor who won a MacArthur "genius" grant in 2005 for his work on social networks. "It actually becomes part of the way in which scientists build theories and think about their own problems."

Kleinberg, who discovered the underlying rules that govern the widely publicized "six degrees of separation" phenomenon, says that computer algorithms will be to science in the 21st century what mathematics was in the 20th century. He says tackling a problem algorithmically allows scientists to change the question from "what is" to "how to," he says.

For example, the "small world" principle — in which any two people are connected by short chains of acquaintances — was demonstrably true, but no one understood just how these chains worked or why they were so short. "Looking at it as a computer scientist, I saw there was really an algorithm going on, a subtle algorithm based on distributed routing," Kleinberg says. His predictions about how friend-

Continued on page 26



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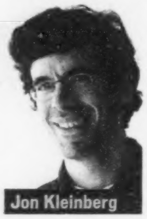
Continued from page 24

ships are formed at different distances, based on those algorithms, have been borne out by experiments.

In another example, biologists struggled with something called the Leventhal Paradox: From an astronomical number of possibilities, proteins fold in the optimum way far faster than can be explained by trial and error. Biologists and computer scientists working together developed algorithms that in essence showed how the proteins find shortcuts to optimum folds without trying every possibility. "That turned out to be a very nice 'how to' problem," Kleinberg says.



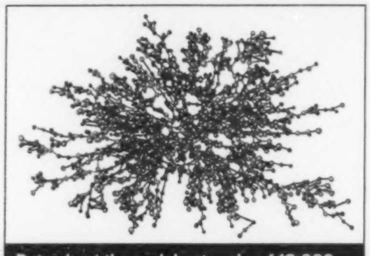
Jon Kleinberg

Tony Hey, Microsoft Corp.'s vice president for external research, speaks of "e-science," a set of technologies for supporting scientific projects where there is a huge amount of data (often distributed), the data and multiple collaborators are networked, and multiple disciplines, including computer science, converge. These projects tend to be enormously complex, and sorting them out is what the tools, algorithms and theories of computer science can help do, he says.

Hey says a "fourth paradigm" in science is emerging. For thousands of years, we have had experimental science, he says. Since Newton, we have had theoretical science, by which experimental results can be predicted by equations. Then, in the second half of the 20th century, we added simulation science, enabled by fancier equations and supercomputers. Now, Hey says, we are entering the era of "data-centric science."

The essence of data-centric science is to aggregate data, often in large quantities and from multiple sources, and then mine it for insights that would never emerge from manual inspection or from analysis of any one data source. He cites as an example a project called Galaxy Zoo, in which the public was invited to help classify millions of galaxies as either spiral or elliptical based on a million detailed images posted online by the Sloan Digital Sky Survey.

An enigmatic green object of a type never seen before was discovered when the public was invited to help classify galaxies based on a million detailed images posted online.



Data about the social networks of 12,000 people indicates that obesity can spread via personal relationships.

The work behind Galaxy Zoo is simple, boring even, and the goal was just to establish a large-scale inventory that would help scientists derive theories about how galaxies evolve. But a year ago, a strange and wondrous thing happened. A high school teacher and Galaxy Zoo volunteer in the Netherlands discovered what would become known as Hanny's Voorwerp, an enigmatic object of a type never seen before. No one is sure just what the distant green cloud is — perhaps an extremely rare type of quasar — and it is now getting intense scrutiny from astronomers.

MOUNTAINS OF DATA

Roger Barga is a researcher at MSR who is developing tools for e-science, which he calls "in silico science — science done inside the computer." He says two technological developments are driving e-science. "The first is that our ability to capture data — through bigger machines, bigger colliders, more sensors and so on — is outpacing our ability to analyze it by conventional means."

The second is the emergence of new tools for pattern recognition and machine learning — algorithms that improve over time as they deal with more and more data, without human programming — and other new ways to organize, access and mine vast amounts of data. For the Neptune ocean observatory, MSR is building a "scientific workflow workbench" on top of Microsoft Windows Workflow, to save, systematize and catalog all the data. It will help scientists visualize oceanographic data in real time and compose and conduct experiments.

The workbench work recognizes that it isn't enough to just analyze data. When data is distributed, complex and voluminous, just getting organized and keeping track of progress is a daunting job for the scientist. The days of microscope, pencil and notebook research are long gone.

Barga says e-science will profoundly affect the practice of science. "Scientists will have to ask themselves if they are theoreticians or bench scientists or one of these new computational scientists in their area. You'll see the branding of a new kind of scientist."

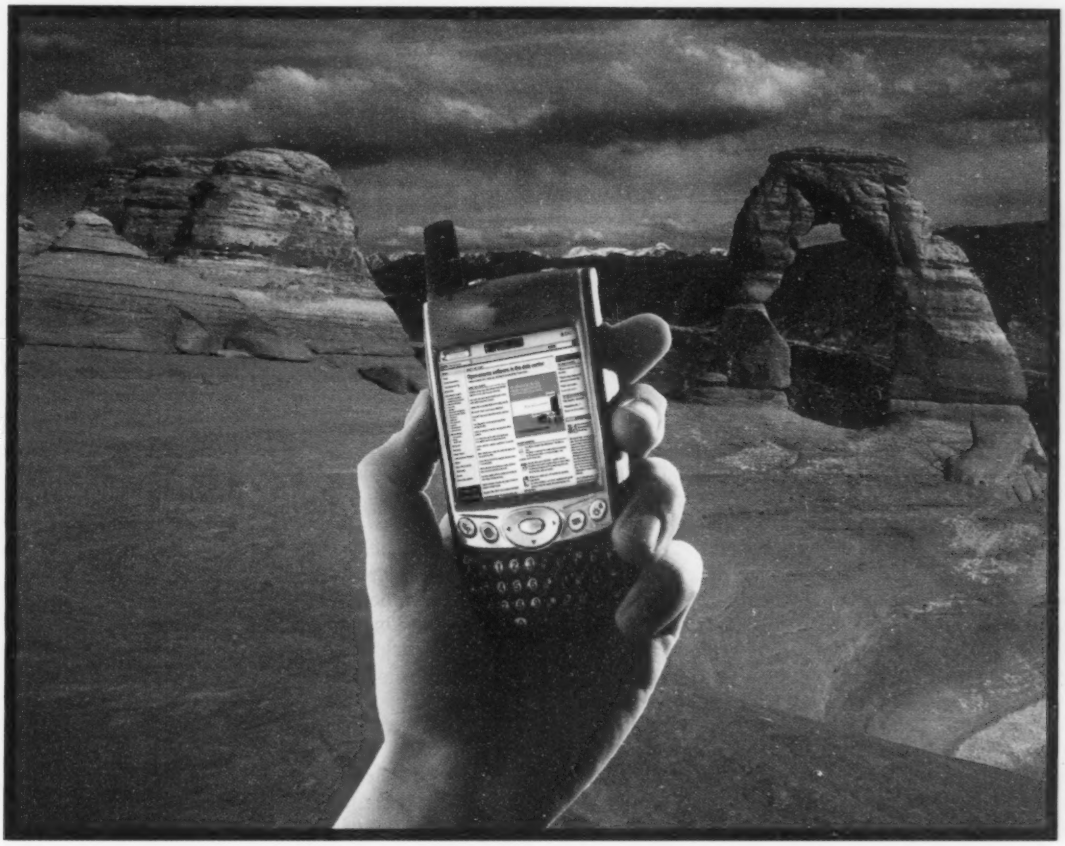
The availability of petabytes of data from the Internet will transform the practice of sciences involving human behavior, Kleinberg says. "For millennia, social interaction has been transient, ephemeral and essentially invisible to the standard techniques of scientific measurement," he says. "It's hard to go around measuring people's friendships and conversations, or why they make decisions. But now we have these digital trails that were never available before. Google is not just looking for simple correlations; all that data is being passed through very sophisticated probability models."

IN THIS ISSUE
For more on how computational technology is changing science, see The Grill, **page 18**

He says the vast data stores and analytical techniques now available mean that scientists no longer have to formulate detailed theories and models and then test them on experimental data. Sketchy ideas can be tried against the data, with the data and tools fleshing out the model, in effect collaborating with the researcher to develop a theory. "The mass of data lets you fill in the details whose broad outline you have created," he says. "Then you run massive amounts of data through it and discover that in the specifics, certain things matter much more than we thought and certain things much less."

Jeremy Gunawardena, director of the Virtual Cell Program at Harvard Medical School, says an emerging model of the cell likens it to a computer — with inputs and outputs and logical decision-making processes.

"A number of biologists with significant stature in the field really feel this is the new way forward for biology," he says. "But we are still in the very early days." ■



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■ SECURITY MANAGER'S JOURNAL | J.F. RICE

Readers' Comments Are Food for Thought

Our manager has gotten **a lot of feedback** from readers. Here's some of **their advice.**

Trouble Ticket

ISSUE: A lot of readers have been forthcoming with advice.

ACTION PLAN: Consider all their recommendations, and heed those that best apply to my situation.

READERS OF this column have provided me with some excellent feedback and advice on my struggle to build a new, effective information security program at my company.

A lot of readers have shown interest in my effort to get buy-in for my security objectives from other leaders in the IT department. Some have pointed out that it is my CIO's responsibility to lead the charge in advocating for information security policies and compliance, noting that some of my difficulties derive directly from a lack of leadership at the executive management level. They're right.

The executive team at my company sees information security as a necessary evil that costs money and eats up resources but doesn't benefit them individually. They can see that information security could help keep my company out of trouble, but only in a vague and unspecific way. The responsibility for turning this perception around has largely fallen to me. I'm working on educating the executives and trying to focus on the positive — rather than relying on fear, uncertainty and doubt — to establish my priorities in the organization. This will take time. It has been my experience that the time frame required to establish the importance of information security at the executive level is substantial, on the order of 12 to 24 months. Ultimately, this is the most important objective for my organization, because it will have the most significant impact on my success as a security manager.

Speaking of the CIO, some readers suggested that he should be responsible for resolving the interdepartmental conflicts I'm experiencing with other IT managers. I completely agree, but I think that realistically, that's not going to happen here.

Every CIO has strengths and weaknesses, and resolving staff disagreements is not one of my CIO's strengths. He prefers a very hands-off approach, letting his reports work out their conflicts among themselves. I'm not going to find any help there — and believe me, I've tried. I'm also hesitant to use the CIO's leverage to directly push my agenda and force the other managers to fall in line, because that would earn me enemies that I'll later need as allies. I've used that approach elsewhere and learned the hard way that I can't accumulate enemies and ultimately be successful. So for now, I'm going to be patient and work through these issues professionally with the help of frameworks and best practices for establishing and maintaining strong business relationships. My approach here is to build bridges.

■ Right now, I'm captain of a leaky boat that requires some serious bailing in order to stay afloat.

TAKING ON WATER

Readers have also observed that security policies should drive the business and technical controls we need to protect our business assets. This could not be more true. Unfortunately, right now, I'm the captain of a leaky boat that requires some serious bailing in order to stay afloat. So I have to plug the biggest holes while at the same time trying to establish a solid foundation that will have lasting value. Policies are under development now, and I'm having success with getting the executive management team and the legal department to sign off on them.

My team is currently publishing a couple of policies a week, so we have built up a good amount of momentum. In the meantime, I'm trying to get the firewall cleaned up and some basic vulnerability remediation in place. I'm taking both a top-down and a bottom-up approach, which someday should meet in the middle.

I'd like to thank everyone who took time to send in comments and feedback, and I look forward to hearing more. My example will ultimately be a great model for turning a difficult challenge into an astonishing success — or it will be a spectacular failure that we can all learn from. Time will tell, so stay tuned. ■

This week's journal is written by a real security manager, **"J.F. Rice,"** *whose name and employer have been disguised for obvious reasons. Contact him at jf.rice@engineer.com.*

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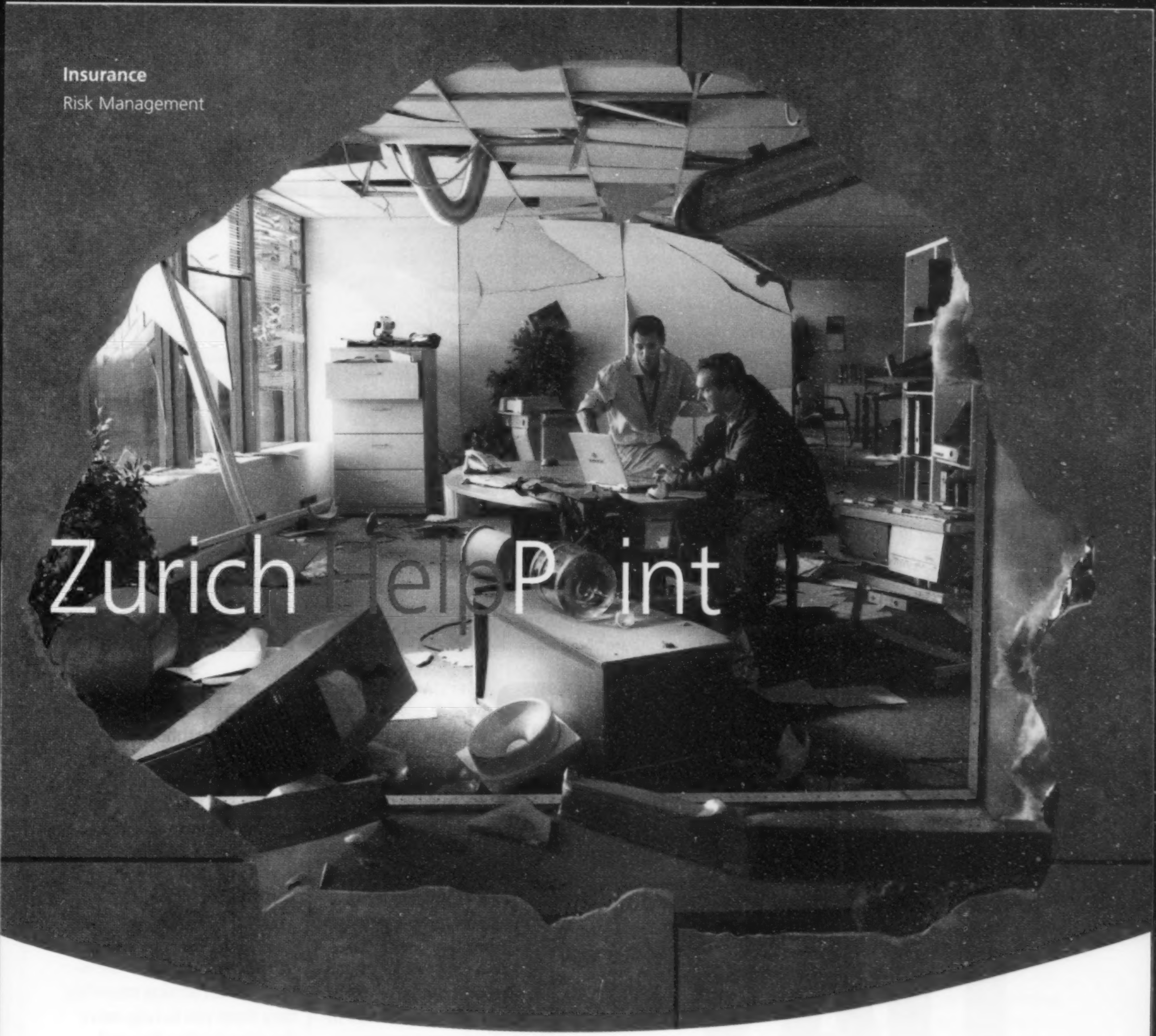

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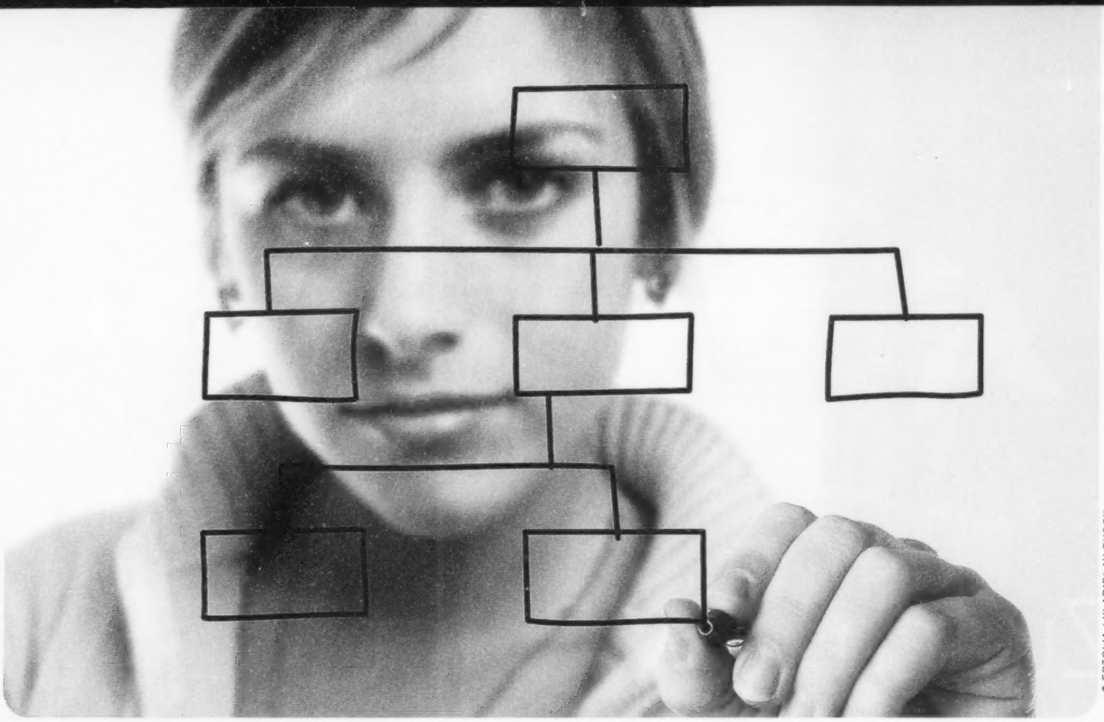

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■ CAREERS

THE 100-DAY PLAN FOR THE REST OF US

C-level execs aren't the only ones who should plan their first months in a new position. **By Mary K. Pratt**

REBECCA PADDOCK needed a way to prepare for her move from a test engineer job to a systems engineer position. So, inspired by the 100-day plans U.S. presidents historically use when they first take office, she developed a list of tasks to tackle.

"I used it as a preparation process for the interviews, and when I got the job, I had a framework in place," says Paddock, who now works in Plano, Texas, as a program manager and director of Six Sigma at Raytheon Co.

U.S. presidents aren't the only leaders who plan for their first few months on the job. Most corporate executives, including CIOs, use 90- or 100-day plans, too.

But Paddock knows that these road maps for successful transitions shouldn't be exclusive to the C-suite.

"The more you can have a vision of how you're going to get from Point A to Point B, and to know what Point B is, the more successful you're going to be, even at a junior level," says Matt Hartzman, vice president of IS at the College of American Pathologists in Northfield, Ill.

So for anyone getting ready to start a new position at any level in IT, here are five action items to use as a guide for your own 100-day plan:

1. ASSESS THE SITUATION.

Companies want new talent to bring something to the table. If IT is running smoothly, they want you to help move the organization forward. If something's wrong, they want you to help fix it.

It's best to determine the organization's needs early on, says Sue Leboza, group vice president of IT for the pharmaceutical products group at Abbott Laboratories, a health care company in

> **" I find the biggest problem that I can and develop a plan to solve it, so it can have a big impact.**
>
> **REBECCA PADDOCK,**
> PROGRAM MANAGER AND DIRECTOR OF SIX SIGMA, RAYTHEON CO.

Abbott Park, Ill. "If you don't ask or don't know, you could be working on the wrong things for your first 100 days," Leboza says.

Consult with your peers, your team members, your supervisors and any other stakeholders to help you develop the most complete assessment.

2. DETERMINE EXPECTATIONS.

You need to know how your boss defines success for your position. But to find out, you need to both ask and observe, says Michael D. Watkins, co-founder of Genesis Advisers LLC, a leadership development company, and author of the *The First 90 Days: Critical Success Strategies for New Leaders at All Levels* (Harvard Business School Press, 2003).

"There's the direct set of conversations you need to have, asking, 'What am I expected to accomplish?' And there are other more subtle expectations that aren't spoken, so you need to identify someone who exemplifies success at your new level and figure out what contributes to that," Watkins explains.

3. IDENTIFY STAKEHOLDERS AND BUILD ALLIANCES.

Of course, you want to get to know your peers and supervisors. But to truly succeed, you also need to identify the individuals who will directly and indirectly affect your ability to get the job done, says Caela Farren, founder and CEO of MasteryWorks Inc., a career and talent management consulting firm in Falls Church, Va.

That's a particularly important point for IT workers, who have to please not only their supervisors, but also colleagues in the business units they serve, Farren adds.

"We're not talking about how many people you know in the organization. We're talking about a purposeful network, where you've met people who can help you," says Bill Byham, chairman and CEO of Development Dimensions International Inc., a management consulting firm in Bridgeville, Pa.

When Hartzman moved from his tech job supporting the sales division at a computer vendor to a job managing the tech support staff, he developed a plan that called for meeting with the salespeople. "That's where I spent most of my time in the first 90 days — building confidence within the sales team, so they would help me build the relationships I needed with the customers," Hartzman says.

4. UNDERSTAND THE CULTURE.

One of the trickiest tasks of any new job is figuring out the corporate culture and office politics so you don't step on toes or run afoul of your colleagues.

Cathie Kozik, corporate vice president of IT at Motorola Inc., remembers that when she first arrived at Motorola, she assumed that as a high-tech organization, it would have the same procedures as her previous company. So she ran monthly operations reviews as she had always done, not realizing it wasn't part of the culture there. Although it wasn't a major sticking point, she admits that there was a "What's she trying to prove?" sentiment as a result. That taught Kozik to put aside assumptions and pay attention to the subtle behaviors that make the organization tick.

5. TARGET AN EARLY WIN.

People will judge you from the start, so you have to establish credibility quickly. One way to do that is to look for an early win.

That's why Paddock's plans include a step to identify and resolve a known problem. "I find the biggest problem that I can and develop a plan to solve it, so it can have a big impact," she says. "This way, your bosses know you're not someone who will sit around and do the easy stuff. You're going to hit the hard stuff." ■

Pratt *is a* Computerworld *contributing writer in Waltham, Mass. Contact her at marykpratt@verizon.net.*

Tactical Tips

Here are a few tips to make your 100-day plan work more smoothly:

Write it down. "I have never seen anybody do this successfully without writing it down. You'll forget things, or you'll add things that weren't originally intended," says Rebecca Paddock, a program manager and director of Six Sigma at Raytheon.

Schedule action items. Use a week-by-week breakdown, Paddock suggests. "I believe it's paramount, because if it's month by month, you'll get sucked in by the fires, and you'll come to the end of the month and realize you can't get [your plan] done," she says.

Be flexible. Many parts of a transition plan overlap, so you'll need to adapt your action items as you gain new information.

– MARY K. PRATT

You Blew It – Now What?

Cathie Kozik, corporate vice president of IT at Motorola, vividly recalls making a major mistake in the first month at her first job out of college. She reformatted the drive on the company's test system, and with a single command, she froze up the system.

"I remember being terrified," she says, "but the take-away was twofold: One, fess up. Bad news does not get better with aging. And make sure you step up."

Kozik, then a customer service engineer at a high-tech company, admitted her mistake and then had to reload the system from scratch while her new colleagues enjoyed a few days' worth of downtime.

IT leaders and career coaches agree that Kozik followed the basic steps that can save your skin when you screw up:

1. Admit your mistake: "There is the potential for recovery – if you recognize what you've done," says Michael D. Watkins, co-founder of Genesis Advisers.

2. Apologize. "Part of fixing the situation is demonstrating that you've got it," Watkins says. "It's saying you're sorry to people you ticked off."

3. Fix what you broke. "It builds your reputation quickly if you handle it well – that you're honest, that you're a problem-solver, that you're willing to learn," says Caela Farren, founder and CEO of MasteryWorks. "Those are things that are assets for tech workers, as IT is one of the quickest-changing functional areas."

– MARY K. PRATT

My Word!

Why *google* is in the dictionary but *AJAX* isn't. **By Robert L. Mitchell**

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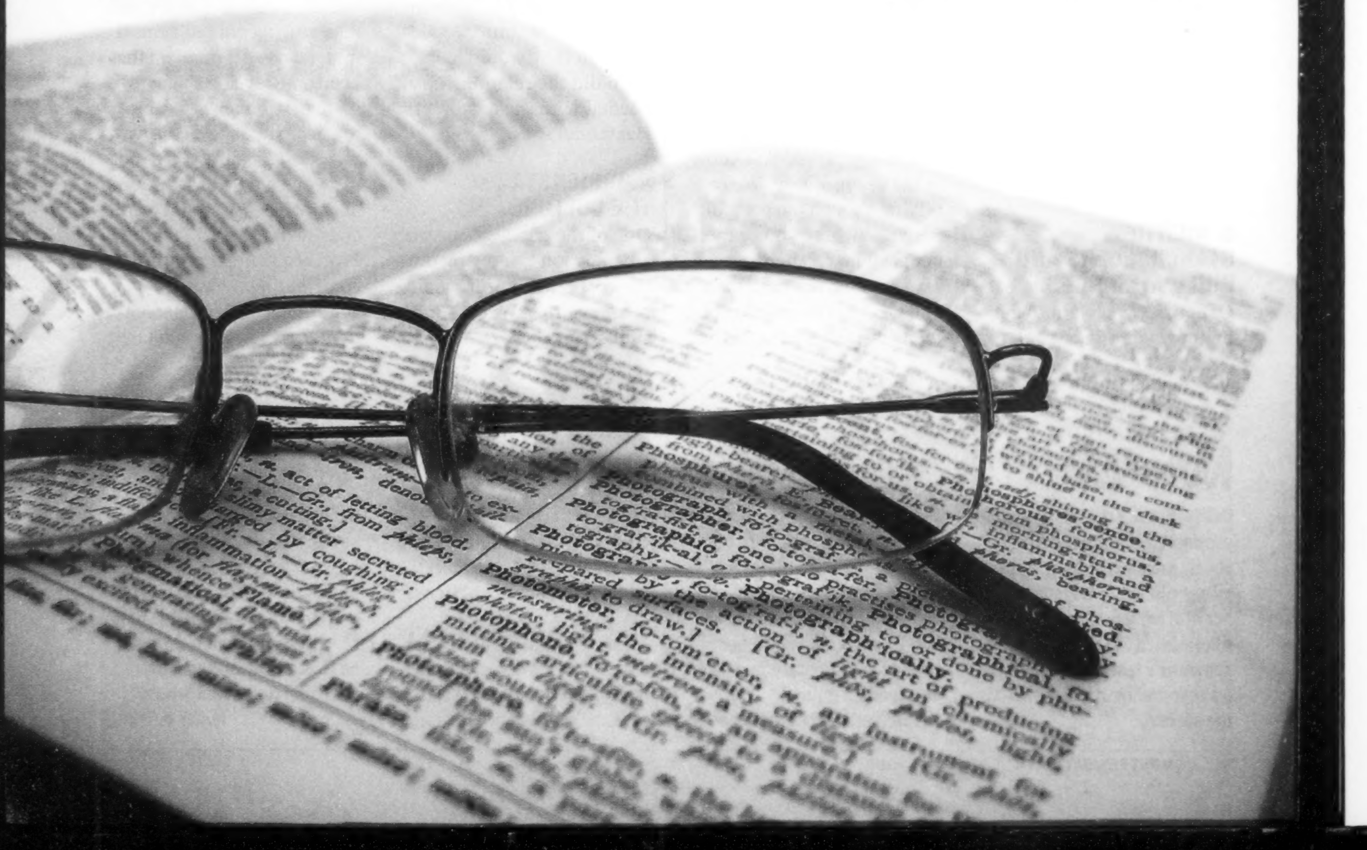
PODCAST is in. *PL/1* is out. *Mashup* is on the short list. But pity poor *eight-track*: It came and went without ever making it into The Merriam-Webster English Dictionary.

The ephemeral nature of high-tech terminology poses a challenge to dictionary editors, who tend to wait years — or decades — to adopt new words. Since technology moves so quickly, the slow rate at which high-tech terms are added to popular mainstream dictionaries makes it look as though the editors are out of step.

Not so, says Peter Sokolowski, editor at large at Merriam-Webster Inc., which offers both a print edition of its dictionary and free access to its contents at Merriam-Webster.com. Editors track new words from the point of first cita-



tion. Most terms don't make the cut simply because they disappear too quickly. "We don't want to have words that come and go," he says.

The word that was adopted most quickly by Merriam-Webster was *Google* as a verb. It entered the dictionary in 2006, five years after the first citation was noted. "In lexicographical terms, that's light speed," Sokolowski says.

In contrast, the editors had been monitoring *malware* since 1990, but it just entered the dictionary this year.

There's good reason to hold back, says Steve Kleinedler, supervising editor for The American Heritage Dictionary of the English Language at Houghton Mifflin Harcourt Publishing Co. "It is not the editors' intent to capture every word that comes out of any given industry," he says.

In the high-tech field, where terms such as those in *Wired* magazine's "Jargon Watch" may rise and fall in a matter of weeks, time separates the wheat from the chaff. "Leaving out the whimsy and the flash in the pan leaves room for essential vocabulary," says Kleinedler.

Jesse Sheidlower, editor at large for The Oxford English Dictionary, says the OED is less conservative than Merriam-Webster in how quickly it adopts new words, adding 200 to 250 every quarter. *Blog*, for example, entered the dictionary in 2003, just four years after the first occurrence was noted.

What's In, What's Out

Term	American Heritage Dictionary	Oxford English Dictionary	Merriam-Webster English Dictionary
Bluetooth	Contender	In	Contender
Blog	In	In	In
Blogosphere	In	In	In
CD-ROM	In	In	In
Chad	In	In	In
Cookie	In	In	In
Crowdsourcing	Pending	Pending	Contender
Data diddling	Removed	Not included	Contender
Digital rights management (DRM)	Pending	Pending	Contender
IM	In	Pending	Contender
Malware	In	In	In
Mashup	In	In	Contender
Netroots	Pending	Not included	In
PL/1	Removed	In	Removed
Podcast	Pending	Pending	In
Solid state disk (SSD)	Pending	Pending	Contender

Note: Pending terms will be in an upcoming edition; contenders are being considered.

WHERE IS IT USED?

Though the earliest citations for many new high-tech words come from the blogosphere and other online venues, those media carry less weight than do print publications when it comes to deciding which words make it into the dictionary.

Words are accepted when the editors observe a critical mass of citations in "serious" publications, Sokolowski says. That means (with a few exceptions) major print publications. Online-only publications with "carefully edited prose," such as *Slate* and *Salon*, are also influential. But blogs are not. "Most blogs are just not carefully edited," he says. "The gold standard has always been the printed page."

Because of the reliance on print citations, the world's biggest search engine also plays a limited role in research at Merriam-Webster. Sokolowski says he uses Google and other online search engines only informally, to begin investigating new words. "Most of the citations we take come from print sources or Nexis [a searchable archive of print and online publications] because that really represents the press," he says.

> **"We don't want to have words that come and go.**
>
> PETER SOKOLOWSKI,
> EDITOR AT LARGE,
> MERRIAM-WEBSTER INC.

The OED's Sheidlower says citations in blogs and other online sources do influence his decision-making process, and he acknowledges that some terms appear chiefly in online media. But he, too, wants to see words spill over into print publications before adopting them. "We would be less likely [to

> **Leaving out the whimsy and the flash in the pan leaves room for essential vocabulary.**
>
> STEVE KLEINEDLER
> SUPERVISING EDITOR, THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE

include words] that are only used in online sources," he says. "But it could happen."

Although widespread usage is a requirement for including new technology terms, editorial judgment also plays a role in determining what goes in and what stays out. For example, Blu-ray the technology won the next-generation DVD format battle, but *Blu-ray* the word won't make it into the OED. The dictionary passed on the names of both competing DVD formats, *HD-DVD* and *Blu-ray*. "You want to make sure you're not putting in something that's going to go away in two months when the technology goes one way or another," says Sheidlower. "Neither of those products is that widespread."

Nonetheless, both technologies are popular enough for Merriam-Webster's editors to include them in the next edition of its dictionary. But the term *beta*, as in beta software, never made the cut at Merriam-Webster. "[*Beta*] was never entered because there wasn't enough evidence that it was used generically," explains Anne Bello, assistant editor.

Seemingly outdated terms may also be added in some cases. For example, *gopher* (in the sense of a network protocol) was added to the OED several years ago, but it is just now on the short list for inclusion in an upcoming version of the Merriam-Webster dictionary Sheidlower says he wouldn't add the term if it were under consideration today, but he notes that the fact that a technical term is obsolete isn't sufficient reason not to include it — or to remove it. "For us to put something in is a statement of faith that it is important," Sheidlower says.

The more technical the term, the less likely it is to make it into the dictionary. While *Wi-Fi* is in, the protocols it uses, such as 802.11b and 802.11g, are not. Another term, *AJAX*, has yet to prove its permanence. "It's a common technology right now, but it is by no means the only technology for dynamically updating Web sites," says Sheidlower.

He also sees it as more of a technical term. "The man on the street probably hasn't heard of AJAX, even if they've used Google Maps," which uses the technology, he adds.

Another sticky area is known as the "Xerox problem," which involves trademarked names that become synonymous with a function, as *Xerox* has with photocopying. In the high-tech realm, *Google* has come into common use as a verb. That's a problem for Kleinedler. "We cannot legally add *Google* [to the dictionary] as a verb. Trademark law is one area where lexicographers' hands are tied," he says, adding that publishers are legally obligated to define trademarks as trademarks (rather than, say, as a verb).

As a result, American Heritage uses roundabout language in its definition of *Google*, as cited on Dictionary.com: "A trademark used for an Internet search engine. This trademark often occurs in print as a verb, sometimes in lowercase."

But not all publishers are so cautious. Merriam-Webster defines *google* as "to use the Google search engine to obtain information about (as a person) on the World Wide Web," giving the etymology as "Google, trademark for a search engine."

LOSING FAVOR

For a word, getting into the dictionary is the lexicographical equivalent of achieving tenure in academia. Once a term gets in, editors are loath to remove it. Editors at Merriam-Webster and American Heritage do occasionally retire words, but those that make it into the OED stay forever and become part of the historic record of the English language, says Sheidlower. That's one reason why he's selective when it comes to high-tech terms. "Other dictionaries can put something in, make a marketing splash and take it out two years later," he says. "We can't do that."

> **For us to put something in is a statement of faith that it is important.**
>
> JESSE SHEIDLOWER
> EDITOR AT LARGE, THE OXFORD ENGLISH DICTIONARY

Competitors are also very conservative when it comes to removing words. Merriam-Webster drops words only during major revisions, which occur once a decade, and those that do get dropped tend to be real antiques. Some of the terms that have gotten the ax recently include *microreader* (first cited in 1949) and *record changer* (first cited in 1931). A relatively modern term by that measure, *PL/1*, the name of a programming language, first cited in 1973, was recently removed from both the Merriam-Webster and American Heritage dictionaries.

Taking out words carries real risks, says Kleinedler. In 1998, during a review of obsolete computer science terminology, the word *chad* faced the chopping block. Then Kleinedler recalled voting with a punch card machine in the previous election. "We decided to hold onto it [for the dictionary's fourth edition, published in 2000]. And lo and behold, the election of 2000 comes along, and suddenly *chad* is everywhere."

American Heritage has removed a handful of technology terms, including *data diddling*. "Anything you'd need to know about that term can be adequately defined by *diddle* itself," says Kleinedler.

Although dictionaries consistently add new high-tech terms as they go mainstream, the editors don't seem too worried about keeping up with either the fast-changing computer technology landscape or high-tech readers. "They're not following us; we're following them. It is they who inform us what needs to go in," says Kleinedler.

For the typical technology enthusiast, the dictionary serves a more important function than providing definitions of high-tech terms that they already know, he says. "[They] are much more likely to use a dictionary to find out how to spell *mischievous* or figure out what the word *olivine* or *slatternly* means, rather than looking up some term that they themselves are on the front lines of establishing in the language." ■

OPINION

Preston Gralla

Microsoft's Secret Weapon Against Google

WITH THE first public alpha release of Windows 7 due today at the Microsoft PDC2008 conference, the outline of the new operating system is taking shape. What you won't see when that alpha comes out is the way that Microsoft will try to use Windows 7 as a Trojan horse in its war against Google.

Google's domination of the search market continues unabated, but Microsoft hasn't given up on it. Microsoft CEO Steve Ballmer recently said that his company is willing to lose "5% to 10% of total operating income for several years" to fund its ongoing attempt to make inroads into the search market. Much more than search is at stake. Google wants to replace Microsoft's desktop-based applications, such as Office, with its cloud-based applications, such as Google Docs.

So where does Windows 7 come in? What new features can Microsoft possibly introduce that will help it overtake Google in search and retain its domination of productivity software such as Office?

Microsoft's secret weapon in Windows 7 is not what features the operating system has, but instead what features it doesn't have. Microsoft is stripping Windows 7 of some of Windows' best built-in applications, and it's making them available only as downloads on its Windows Live site.

When Windows 7 comes out, it won't include Windows Mail, Windows Photo Gallery and Windows Movie Maker, which are some of Vista's most useful applications. Windows Movie Maker is a surprisingly sophisticated piece of software for creating videos and DVDs, and it's worthy of being sold as stand-alone software. Windows Photo Gallery is a well-done, elegant way to manage digital photos. And Windows Mail is the successor to Outlook Express, with a very big installed base. Expect users to howl in protest when they find those applications gone, particularly Windows Mail.

■ Microsoft's secret weapon in Windows 7 is not what features it has, but instead what features it doesn't have.

To get them, users will have to visit the Microsoft Windows Live site, where the software can be downloaded for free. And, of course, there will be plenty of other Windows Live software they can download, as well as other Windows Live services they can use. It's a variation on the classic "loss leader" in retail, where you lure folks in with freebies and then pounce with a hard sell.

Microsoft claims that it is stripping the applications out of Windows 7 because it makes for a "cleaner" operating system. But there are plenty of useless applications it could strip out of Windows to no ill effect. The backup program in Vista, for example, is close to useless. And as for People Near Me or Windows Meeting Space — do you use either of those programs? Do you know anyone who does? Those could easily go to make for a cleaner operating system. And while Microsoft is at it, it could get rid of User Account Control. I don't know anyone who would cry real tears if that one bit the dust.

I expect that there will be plenty of other hooks in Windows 7 to get people to go to Windows Live. And I don't expect all of those hooks to be consumer-oriented like Photo Gallery and Movie Maker. Don't be surprised if there are enterprise-related hooks as well.

All this may be clever marketing, but it won't work. Microsoft may be able to push users to Windows Live, but if it doesn't build better search and better services than Google, people will stay with Google.

If Microsoft wants to eat into Google's share of the search market, there's only one thing it can do: Build better search. If it wants to make sure that Google doesn't threaten its near-monopoly of productivity suites, it will need to make some version of Office available over the Internet.

The key to battling Google is building better software and services. Stripping useful applications out of Windows isn't the way to win the war. ■

Preston Gralla *is a* Computerworld *contributing editor and the author of more than 35 books, including* How the Internet Works *and* Windows Vista in a Nutshell. *Contact him at preston@gralla.com.*

Career Watch

Salary Budgets Defy the Economy

U.S. COMPANIES' salary budgets will increase by nearly 4% in fiscal 2009. At least that was the finding of a survey released in August, before the $700 billion bailout bill was even being discussed. The survey of 2,479 human resources, compensation and benefits professionals was conducted by WorldatWork, a not-for-profit professional association for the human resources industry. The 3.9% national average is spread out remarkably evenly, with the averages in the 50 states varying between 3.7% and 4%. The averages of 24 metropolitan areas came in at either 3.8% or 3.9%; a 25th metro area in the survey came in at 3.7%. And it's worth noting that WorldatWork has a good track record; its projections for 2008 in the following categories exactly matched the actual percentages for that year:

	ACTUAL 2008	PROJECTED 2009
Nonexempt hourly, nonunion	3.8%	3.8%
Nonexempt salaried	3.8%	3.8%
Exempt salaried	3.9%	3.9%
Officers/executives	4%	4%

ASK A PREMIER 100 IT LEADER

Guido Sacchi

The **CIO** at CompuCredit Corp. answers a question on **dealing** with **'clueless'** new hires.

I've been in IT for nearly 20 years, and I'm dismayed by the cluelessness I see in the young people we've been hiring lately. I've tried to reach out to them, but they act like old-timers can't tell them anything useful. Meanwhile, they are stuck on what they were taught in terms of IT infrastructure, they have no interest in why ours is the way it is, and they have nothing useful to share on how we might move to something more up to date. I want to tell them, "Welcome to the real world," but I know that wouldn't be helpful. I know I have to work with them, and I'm willing to hear what they have to say, but it's frustrating when they show no interest at all in my experience. How can I get through and develop a better relationship? If your goal truly is to develop a better relationship with young new hires, then I would suggest that you abandon all the negative assumptions you are making about them as a group. When dealing with difficult people in difficult circumstances, a good framework that I have used over the years, with great results, includes some steps that I recommend you try.

QUESTION?
If you have a question for one of our Premier 100 IT Leaders, send it to **askaleader@computerworld.com,** and watch for this column each month.

First, focus on what you want to achieve, not on other people's behaviors. Among other things, this will help you actually reach your goals, as opposed to increasing your own stress levels.

Second, don't start with questioning other people's legitimacy of motives. It is a good first approximation to assume that other people are rational, acting in good faith and not out to get you. We all see the world not as it is, but through the lenses of our experience, values and beliefs.

Third, explore their interests and take action accordingly. There usually is a big difference between "position," in this case, what you are hearing and seeing, and "interests," the parts of the iceberg below the waterline, which require a process of exploration on your side.

Once you have done this, you may well make important discoveries and take effective actions. For example, why don't you start with one or two new hires and have a conversation with them, maybe over lunch? Find out their career objectives, what interests them in the IT field and their initial impressions of the company.

During this process of discovery, you may find that you share some common interests – for example, they may be interested in building experience in new virtualization technologies. If that's the case, you have something concrete that will help you build positive relationships.

There are also other resources you can use, from books to articles, that offer suggestions on effective ways to engage Generation Y'ers, or "millennium kids." And remember to send them the lunch invite via Facebook, not that old e-mail tool.

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SharkTank

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

Another Nice Mess

Call wakes this sysadmin pilot fish just after midnight: A job has failed on a batch run, and the computer operator wants to know what to do. "I asked the operator to get me a few more details off the screen while I got ready to dial in and look at the fault," says fish. "In the meantime, the operator sitting five feet away from the first one also spotted the fault and tried to ring me while I was on the phone to the first operator. He then decided to ring my boss up and complain about my phone going straight to voice mail. The first operator came back and said, 'It's OK – the other operator couldn't contact you, so your boss is looking at the fault.' I pointed out the reason I could not answer the phone was that I was on the phone talking to him at the time. I then had to phone my boss to explain what happened. As he had all the details, he offered to fix the fault anyway. I have now changed my ring tone for the operators to the Laurel and Hardy theme song."

That Would Explain It

Pilot fish works overnight operations at a nuclear plant, mainly watching backups and making sure the control room is up and running. "At 3 a.m., I get a call: 'Printer won't print,' " fish says. "Bleary-eyed, I hosed the top job on the queue and didn't bother to look at anything else. Ten minutes later, I get another call: 'Printer won't stop printing.' I ask, 'What are you printing?' 'Only the whatsit report,' which I know is about 30 pages long. With a bit more attention, I look at the queue again. There I see what looks like the output of a practice Basic program echoing a string ad infinitum. 'How many times did you send in the print job before you called me?' I ask. Muffled conversation, and the voice comes back somewhat sheepish: 'We dunno . . . a lot?' "

Hey, That's My Job!

User is working in someone else's office, and her laptop's screen isn't showing up on the external monitor. Desktop support pilot fish gets the call and heads to the scene. "We discussed the problem, and the user suddenly realized what the problem might be," says fish. "She moved her head closer to the cables to plug something in and then stood back up. *Wham!* She whacked her head on the bookshelf – hard. Neither of us said anything, but she did discreetly rub her head while we continued to discuss the problem. Despite valiantly trying to keep a straight face, I felt quite bad, especially thinking about it afterward. I'm paid to do that job, so it should have been me whacking *my* head!

■ *Sharky recommends protective equipment for all IT people and users. Failing that, tell me what happens. Send me your true tale of IT life at sharky@computerworld.com. You'll score a sharp Shark shirt if I use it.*

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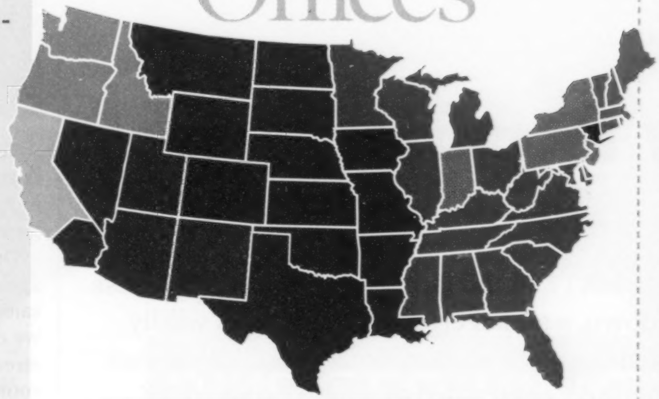

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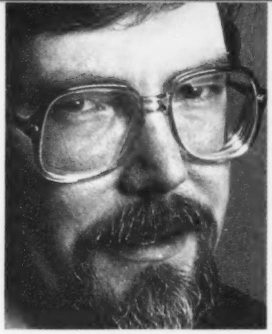


Slow Means Fast

NOW WHAT? In the face of a deepening business slowdown, a global credit crunch and a wildly fluctuating stock market, what should corporate IT shops do next? Gartner's top answer at its Symposium/ITxpo 2008 conference this month: Prepare for hiring freezes and layoffs.

Yeah, we could do that. Or we could kick IT into high gear.

No doubt the budget cuts will come, and we have to be ready for them — freezes, layoffs and all. We don't need the sages of Stamford to tell us that.

But if we really want to be a useful part of the businesses we serve, we can do something a lot more valuable: deliver competitive advantage.

See, there's a fundamental paradox about business slowdowns and IT. When business is brisk, IT has the time for big projects with long schedules. But when business is slow, we have to move fast.

Confused? Think about it. In a good business environment, there's plenty of low-hanging fruit for salespeople, and plenty of budget for IT. That's when we get the green light for big infrastructure projects and process improvements that may not pay off immediately. Why? Because the money is there. Why is it there? Because it's easier for the sales guys to keep the orders coming in.

In an expanding market, there's more money to go around. Competition is likely to be less intense. The pressure is off. We can take our time.

Now, what happens when business dries up? Companies have to cut costs, streamline processes — and steal business from competitors.

The first one is obvious. The second makes sense to process-oriented people like us. But why focus on stealing business from competitors?

When business is brisk, IT has the time for big projects with long schedules. But when business is slow, we have to move fast.

Because that's the only place it can come from. Remember, the market is shrinking, not expanding. We have to gain market share just to stay even. So the heat is on. Never mind growth — just to hold our own, our salespeople have to keep our own customers while they lure business away from our competitors.

And how can they steal those customers and their orders? That tends to be highly tactical. Maybe it's a price cut that happens a little sooner than the competition's. Maybe it's an order that's confirmed more quickly. Maybe it hinges on a salesman's ability to pull up the numbers he needs on a moment's notice to close the deal.

But it's almost always about speed. Not just how fast sales can act, but how quickly IT can set up salespeople with the tactical tools they need.

To steal customers and business, a salesman has to move fast. And that means we do too.

Of course, that need for speed doesn't end with sales guys. The sooner we can cut costs and streamline processes, the sooner they'll show up on the bottom line. We have to do that. All our competitors will, too.

But shifting into high gear on tactical requests from users, so that they can offer something our competition can't immediately match? That's the very definition of competitive advantage.

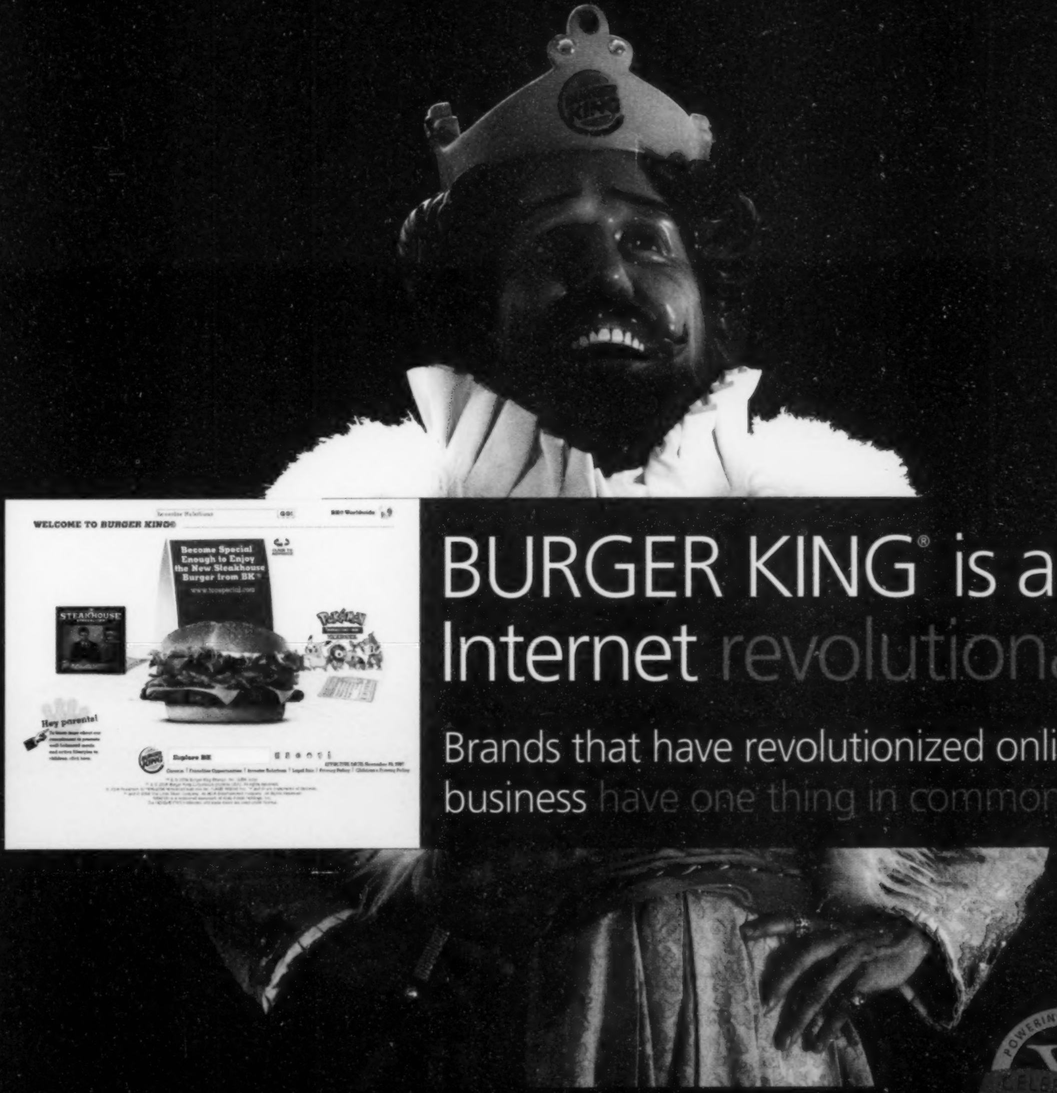
Understand, those tactical deliverables often aren't pretty. They're inelegant, rushed and messy. They're enough to get the job done. They test the limits of our project management skills, business knowledge and professionalism.

They're a long way from business as usual for IT. They're also exactly what our businesses need right now.

So that's what's next: We can kick IT into high gear and create a competitive advantage.

Or we can roll over and wait for the ax to fall. ■

Frank Hayes *is Computerworld's senior news columnist. Contact him at frank_hayes@computerworld.com.*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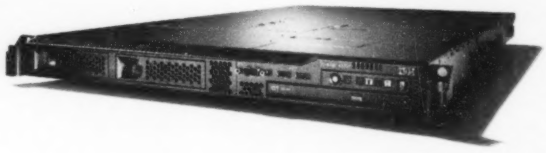

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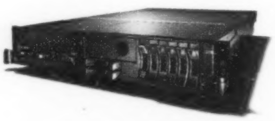

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